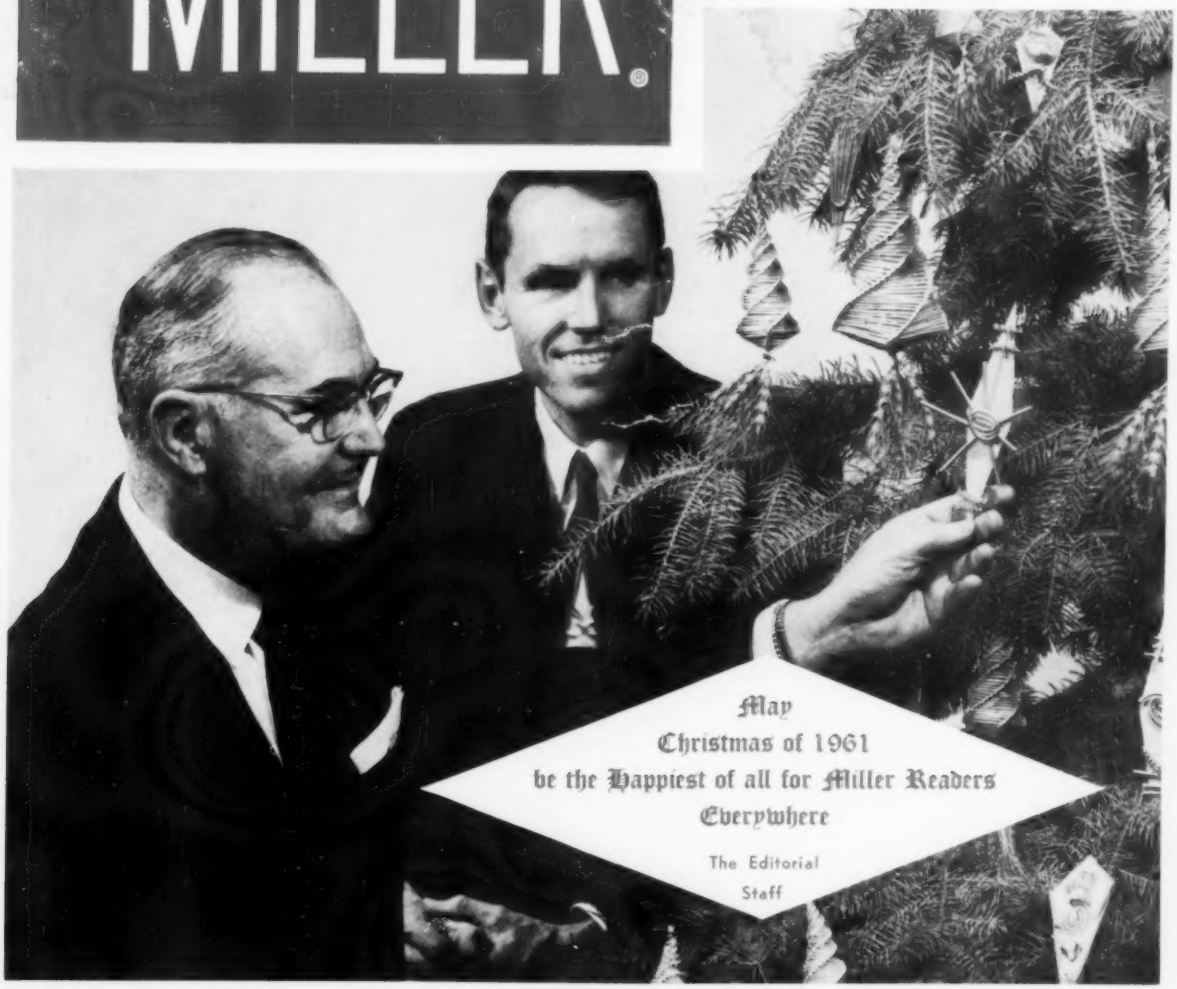
the NORTHWESTERN MILLER

THE INTERNATIONAL MAGAZINE
FOR THE GRAIN, MILLING
AND BAKING INDUSTRIES



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Volume 265 DECEMBER 11, 1961 Number 25

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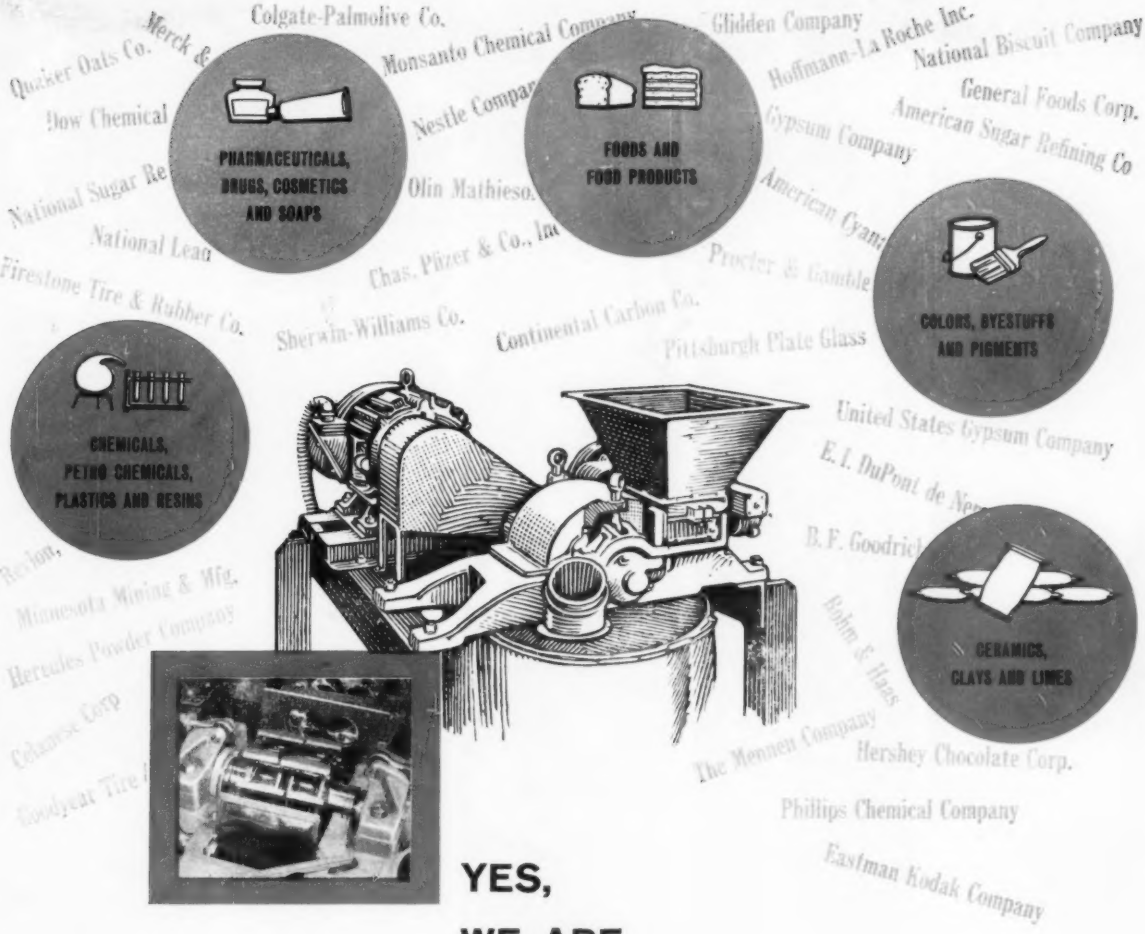

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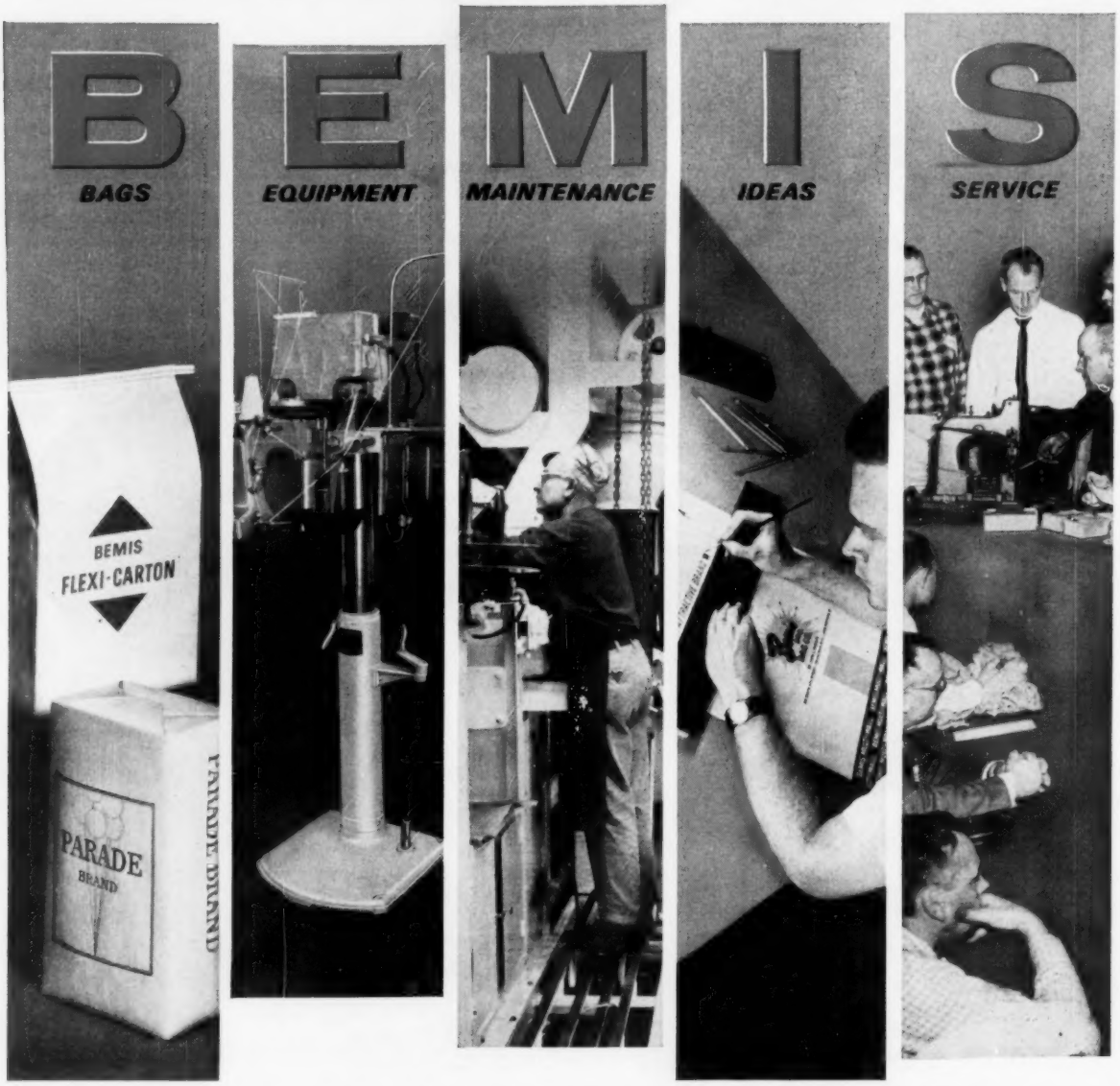

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the NORTHWESTERN MILLER®

Incorporating Milling Production®

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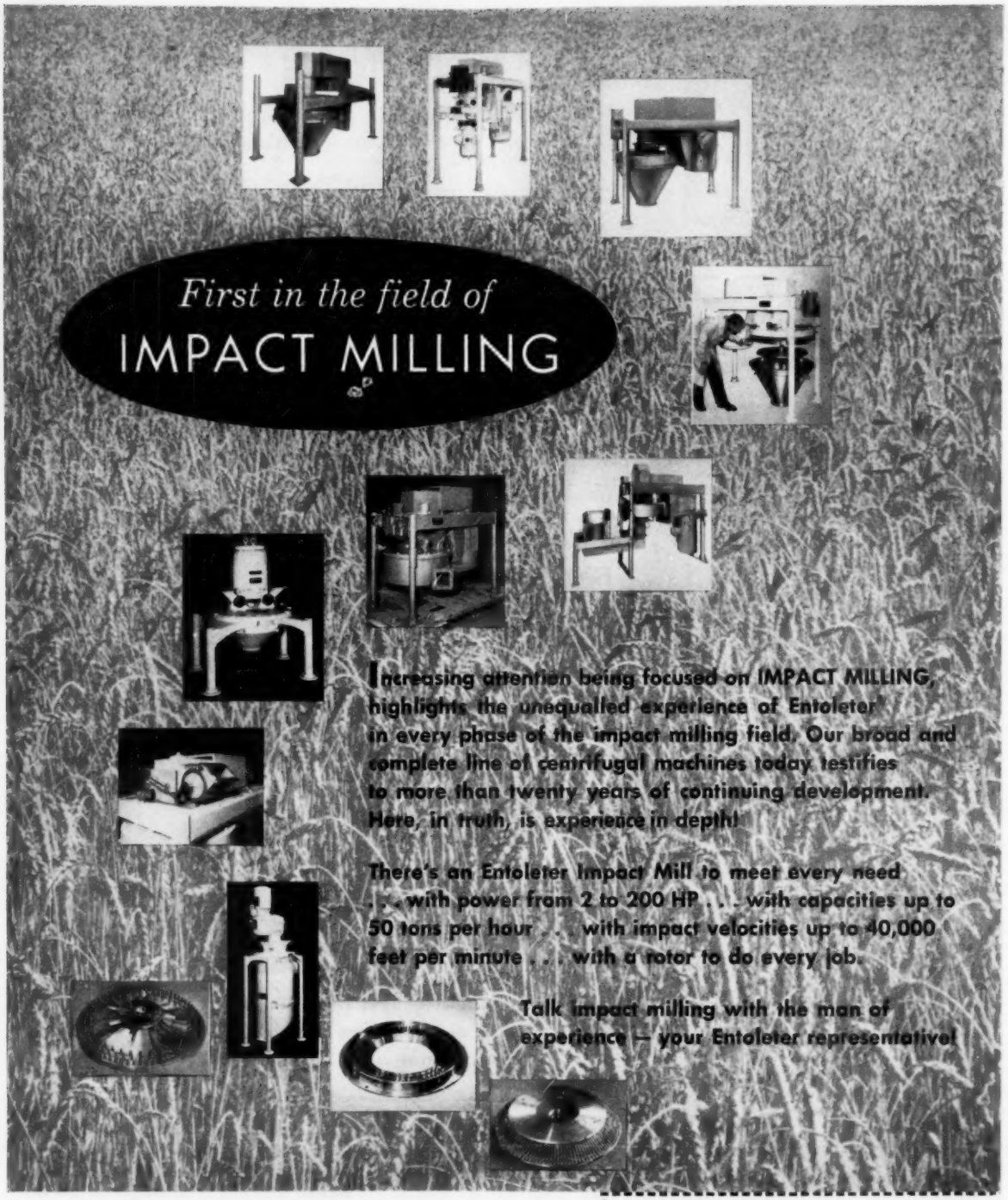
COVER PICTURE—

Who more appropriately than Lee Merry to help the staff of THE MILLER extend Merry Christmas wishes to readers all over the world? Mr. Merry, manager of durum products sales for General Mills, Inc., is pictured at the left admiring an ornament . . . made from macaroni products. Braided wheat stalks also make attractive tree ornaments. Others were made by the Indians of Guatemala and were brought back by Paul Nutt, smiling on the right, who is in the comptroller's department of the GMI flour division.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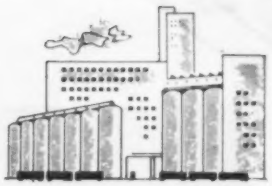
EDITORIAL OPINION



Problem '62—The European Common Market

WHEN PLANS for a European Common Market were formulated some years ago, the principles enunciated by the participants—six countries—were applauded by the Department of State. Senior U.S. officials fell over themselves in their eagerness to welcome something they saw as a means of rebuilding the European economy, an economy already helped to its feet by American aid in all its varied forms after World War II.

Their reasoning was sound on the surface. They argued that a healthy Europe would be a good customer for U.S. goods and services, able to pay cash on the barrel head.

Officials of the Department of Agriculture, on the other hand, voiced some misgivings. They did not see the Common Market as the panacea for the ills besetting multilateral trade between the European countries involved and the U.S. And they felt that the new organization was a snare and a delusion as far as American agricultural exports in particular were concerned.

What the state department failed to appreciate, and still fails to appreciate, is that the Common Market is aimed at self sufficiency among the participating countries in as many products and commodities as possible. The surplus of one country will be absorbed by the others.

Among the commodities in surplus, agricultural products loom large.

This departmental cleavage still exists. Dean Rusk, secretary of state, is a booster of the Common Market. So keen is he on the panacea that he is willing to accept the rather general assurances that have been made by the six participating nations—and subscribed to by the seven who wish to join the club—that consideration will be given to U.S. farm products in establishing the tariff barriers needful for the success of the scheme.

Orville L. Freeman, secretary of agriculture, on the other hand is more realistic. He is emphatic in saying that the U.S. should not cooperate in the consolidation of the Common Market unless specific assurances are given guaranteeing that U.S. agricultural products will be allowed to retain their "traditional historic share" of the European market.

Mr. Freeman agrees with Mr. Rusk that industrial and political combinations can be made in Europe that will be advantageous to the free world. But he is, as he has demonstrated in other areas of endeavor, extremely conscious of the best interests of American farmers. For that Mr. Freeman must be commended, even by those with whom he does not see eye to eye. When it comes to matters of common interest all Americans are staunchly bipartisan and in Mr. Freeman they have a fighting champion.

In the situation now confronting the U.S., Mr. Freeman's stubbornness is a national asset. He will have none of the barricades the Common Market countries plan to erect against U.S. farm products.

The Common Market will restrict the free flow of two way trade between the U.S. and Europe. Import duties and quotas will be used as a means to stifle trade. The arithmetical average of the import duty on commodities imposed by all participating nations will be the basis, in many cases, for the Common Market duty in the final assessment. For instance, in the case of flour, the six current members could average their duty at 30%—and that would kill the valuable market the U.S. millers have in the Netherlands.

By the same token, the Dutch exporters might see the end of their prized cheese market in the U.S., for all trade must be worked on a basis of reciprocity.

A major problem facing the U.S. administration in 1962 is the renewal of the Reciprocal Trade Agreements Act. Intransigence on the part of the European nations could well help kill off a most valuable piece of machinery aimed at building up two-way trade with other nations. They would do well to remember this. «

Problem '62—The New Despotism

DESPOTS there have been down the ages. Tyrannical autocrats, they ruled without constitutional check or restraint.

Today, many people feel, there has arisen in the United States of America a new despotism—the tyrannical rule of the public official. The attitude of the middle and near-upper echelon members of government departments towards the public is one of ruler to servant. Orders are given at their whim, often by means of regulation rather than law, and the people have no recourse but to obey.

The deportment of top level officials is invariably one of courtesy though not all of them live by politics alone. Their underlings, however, when called upon to meet the taxpayers, have a deplorable attitude of superiority.

When compelled to attend public hearings or meetings on any controversial matter resulting from government edict, some of them tend to smile covertly behind their hands, to answer without amplification and treat those attempting to clarify a point or state objections with something akin to contempt.

This despotism has been growing for some time now but it appears to have reached a peak under the Kennedy administration. Businessmen attending hearings have come away somewhat less than impressed with the way their points have been received by some officials of government departments. Their statements have been heard with condescension and though assurances are given that the views expressed will be conveyed to the highest authority, it is apparent in too many cases that officials are merely paying lip service to the citizens' right to be heard.

These government men, by their very stance, indicate they will brook no interference. What will be, will be. The points made by experts with the hope of improving a government decision or regulation are paid little heed.

Fortunately, there are many public officials who do not espouse this attitude. Those that do should remember the dictum voiced by Dean Rusk, secretary of state: "Under our constitutional system, the loftiest position is held by the citizen. Officials are public servants." «

Deck the Halls . . .

A Christmas Revel

By George E. Swarbreck

How to Be Un-Bored on Christmas Day . . .

24 Things for Millers to Do . . .

1. Help spread the rumor there is no Orville Freeman.

•

2. Call George Larrick, the FDA boss, and ask if he has any fish flour products on his festive board.

•

3. After he calms down, congratulate George on walking out of that senatorial fish flour luncheon without eating a few weeks ago.

•

4. Think of a new name for the Department of Flour and Feed Milling Industries, Kansas State University, one which will immediately tell the story of its usefulness to the milling and baking businesses.

•

5. Call John Shellenberger, department chief, or Chick Laing of Abilene, head of the Millers Advisory Council, and tell them your idea.

•

6. Think of a new job for Orville Freeman.

•

7. Call Dr. Lawrence Zeleny and ask him how to run that thar test.

•

8. Plan to build a flour mill in Hawaii.

•

9. Think of names appropriate for the middle initials of (a) Casper **L.** Mast, Jr., (b) Donald **S.** Eber, (c) John **J.** Sherlock, (d) Raymond **J.** Tarleton, (e) Gordon **P.** Boals, (f) Rondal **M.** Huffman, (g) Fred **M.** Mewhinney.

•

10. Try to remember what was there before the First National Bank skyscraper in Minneapolis. (No peeking by Minneapolis readers. Non-Minneapolitans turn upside down—the page, not themselves.)*

•

11. Count the number of times **your** name has appeared in THE MILLER.

12. Bake a loaf of bread with your competitor's flour.

•

13. Cross your fingers.

•

14. Try to remember what is the oldest piece of equipment in your mill.

•

15. Worry about Orville Freeman's future.

•

16. Try to decide whatever made you become a flour miller.

•

17. Think who was the best miller you ever knew.

•

18. Remember, if you think you're going down for the third time, you may have counted wrongly.

•

19. Call John Locke of Fisher in Seattle and ask where the next convention of the Millers National Federation is going to be held.

•

20. Tell him the publicity business lost a good man when he decided to become a flour miller.

•

21. Try and buy some exhibit space at the Denver-Hilton for the annual trade show of the Association of Operative Millers because tomorrow may be too late.

•

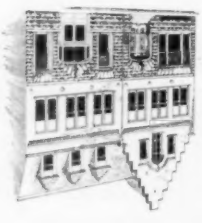
22. Write a play with a flour broker as the hero.

•

23. Ask Judson Bemis if anybody has ever let that cat out of the bag.

•

24. Have yourself a Merrie Olde Christmas.



The office of THE MILLER at 118 South Sixth Street opened in 1898 and the company headquarters until 1954 when the edifice was torn down to make way for the magnificent bank building. *

The Ghost of Christmas Past . . .

OH! could we but tell you the tale of The Miller of Tangletown, the adventures of Blueskin the Pirate, the woeful history of A Graceless Husband—a farmer no less and not a miller for which St. Nick be praised—or the astonishment following Sari's discovery.

Tall tales and romantic, poetry lyrical in its quality, would have been yours had you been a reader of The Northwestern Miller in the halcyon days of yore. That was nigh on 70 years ago when the redoubtable William C. Edgar published a series of special Christmastide Holiday Numbers.

Masterpieces of the printing and engraving arts, they are still a joy to behold, faded and yellowed with age as they are. Copies are among the treasured possessions of many a milling family in Minneapolis and other major milling centers across the nation. The stories were designed to be read around the fire by the head of the household and all had a moral tucked away somewhere.

Introducing the Christmas number of 1893, Editor Edgar quoth: "On such a day, it seems to us that business talk or comment on commercial affairs is as glaringly out of place as a third party at a meeting of lovers, or the presence of a bill collector at a wedding feast . . . Christmas and business have nothing in common. The ghost of commercial perplexity should be laid, at least for this day, and the shadow of work which calls for men's whole thought for the rest of the year should not be allowed to dim the light of the Christmas candles, or add to the chill which the Christmas fires are honestly trying to drive out for one day from human hearts more or less frozen the year 'round. Each of them will bear its own burdens, but today—and the older we grow the more we insist on it—today, let us for the sake of good St. Nicholas, forego to talk shop."

That, for the flour miller of today, is easier said than done!

A Christmas Carol

CAROL! carol! miller!
Carol like a man
For flour's down and wheat is up
But carol if you can.

Carol! carol! miller!
Times are most merry now;
The devil's got the markets.
You've got to stand the row.

For Fun, Good Eating Go Wild in the Kitchen

WILD is the cookbook that comes from the fecund mind of Will Jones, nationally known entertainment columnist of the Minneapolis Tribune.

It might have been called The Gastronaut or even How to Make Love with a Spoon. And author Jones even toyed with Kook Book and Food to Listen to Music By.

But "Wild in the Kitchen" it became and millers and bakers, by tradition and profession lovers of good eating, will appreciate this esoteric rendition of some of the wildest recipes known to Jones and man.

Written with scintillating wit, it is a book to go to bed with for its entertainment value alone. But the urge to spring out of bed and get to the oven, or even to the barbecue on the patio, no matter the Christmas snows, may be insurmountable. Between the covers are the blueprints for some succulent delicacies. Adding to the attractions that make the gastric juices gurgle with anticipatory pleasure are the illustrations of Rob Roy Kelly, an artist who can turn as witty a line as Mr. Jones himself.

Priced at $4.95, "Wild in the Kitchen" by Will Jones, may be obtained from any bookseller or from the publisher, Gilbert Publishing Co., 2303 Fourth Avenue S., Minneapolis 4, Minn.

"Time an' again," said Old Dad Fetchit of the Fish River Roller Mills, "I get to thinkin' that in goin' on right clost to two thousand years, they'd ought to be thought up a way to wish happiness to folks that's got some new kind of ketch to it. An' yet, when it comes right around Christmas an' you see the holly an' the mistletoe hangin' in the windows, an' the kids with a light shinin' in their eyes that nothin' else can't put there, an' you c'n already hear the bells ringin' to tell the old, sweet story of the little town of Bethlehem, it don't somehow seem wuth while to try for thinkin' up somethin' new. I allow it's one case where old things is best, an' that they won't ever be any words that'll tell the story of 'peace on earth, goodwill toward men' like jes' sayin' 'Merry Christmas.'"

INDUSTRY RECORD . . .
An account of Trade Affairs and Events

United States:

THE VOLUME OF agricultural exports from the U.S. has more than doubled the past eight years and, in the opinion of one leading exporter, there's good reason that it may redouble by 1970. **Walter C. Klein**, president, Bunge Corp., cites fact that more than half the world's nations do not produce enough food to provide their people with an adequate minimum diet.

Drawing on figures provided by U.S. Department of Agriculture, Mr. Klein points out that export volume of these commodities rose by 108% from 1953 to 1961, while value went up 75%.

WILLIAM L. RAINEY RETIRES FROM ADM

William L. Rainey, a veteran of more than 40 years in the flour milling industry—and one of its most widely known figures—has retired from the Commander Larabee division of Archer-Daniels-Midland Co. Mr. Rainey has been manager of Commander Larabee's new products department the past two and one-half years. He joined the firm in 1922 as a control chemist in St. Joseph, Mo., and was transferred to Minneapolis in 1930. Two years later he became chief chemist, and in 1951 was named technical director of ADM's flour milling operations. In recent years he has been associated closely with research on Ardex 550, the protein supplement and milk solids replacement developed by ADM for the food industry. Originally of El Dorado, Kansas, Mr. Rainey first entered milling as a chemist with the William Kelly Milling Co. at Hutchinson, Kansas, in 1919. He has served on the technical advisory committee of the Millers National Federation and as a director of the American Association of Cereal Chemists. He also is a member of the American Society of Bakery Engineers and the Institute of Food Technologists.«

C. M. Galvin Plans Retirement Jan. 1

C. M. Galvin, partner in Francis I. Dupont & Co. and a fixture in the grain crop reporting and estimating field for a quarter of a century, will retire Jan. 1. Concisely put, Mr. Galvin is hanging up his slide rule and putting his comptometer in dry dock, thereby retiring from the grain business to reside in Florida's "sunny clime." Mr. Galvin was a long-time member of the "big-six" in the field of private grain crop estimating, ranking along with **B. W. (Barney) Snow, Eileen Miller, Richard (Dick) Cromwell, Henry Donovan** and **Nat Murray**. All members of that elite except Mr. Galvin retired from their duties years ago —but he continued to release his monthly estimates all through the growing season — and several days prior to official reports made by the U.S. Department of Agriculture. The veteran Mr. Galvin's month-by-month estimates were phenomenally accurate, although he has worked completely independent of the government's Crop Reporting Board. His bushel figures have varied little from the official ones, which in turn has sparked the oft-repeated, joking observation that "Uncle Sam must have been looking over Galvin's shoulder."

C. M. Galvin

●

Pillsbury Merges Grocery Products

Distribution of the Pillsbury Co.'s grocery products, formerly handled at service centers in four areas, has been consolidated in downtown Minneapolis, with final move being the closing of center at San Mateo, Cal. Previously, regional distribution offices were closed at Buffalo, Des Plaines, Ill., and Memphis, Tenn. New distribution center, now only in temporary location, has added about 90 employees to Pillsbury's Minneapolis operations. Move means that henceforth orders from all the company's more than 500 grocery products salesmen will come to Minneapolis for processing by electronic computer.

●

Omaha Bread Prices Expected to Rise

Rise of 2¢ a loaf in bread prices at Omaha is expected by first of the new year, with bakery executives making the prediction of the opinion that such an increase is long overdue. Factors which they consider responsible for anticipated increase are: (1) Higher flour prices; (2) increased wage rates; (3) rising distribution costs, and (4) expected hike in government support prices for wheat next year.

●

South Dakota Joins Great Plains Wheat

Effective Jan. 1, the South Dakota Wheat Commission becomes a contributing member of Great Plains Wheat, Inc., boosting actual producer representation in the market development organization to more than 300,000, which figure includes 21,000 Colorado wheat farmers through that state's Wheat Administrative Committee. Application of South Dakota group was approved at a meeting in Denver, with that state's commission represented by **Paul Guiser**, chairman; **Ernest Covey** of Hamill; **Melvin Borkichert**, Roscoe; **Andrew Brakke**, Presho, and **Charles J. Tutsch**, executive director of the commission's office at Pierre. South Dakota organization was set up earlier this year by an act of the legislature, at request of South Dakota Wheat Producers, Inc., and is financed by deduction of three mills per bushel, a levy paid by wheat growers when their grain enters marketing channels. Commenting on the new membership, **Clifford R. Hope**, president of Great Plains Wheat, said, "It's always a pleasure to add to our organization, and this is especially true in the case of South Dakota."

●

General Mills Declares Dividend

Board of directors of General Mills, Inc., has declared quarterly dividend of $1.25 a share on company's 5% preferred stock, payable Jan. 1, 1962,

to stockholders of record Dec. 8, 1961. Dividend is the 89th consecutive one to be paid quarterly on 5% preferred shares.

●

West Virginia's Sales Rise; Earnings Drop

Preliminary figures released by West Virginia Pulp & Paper Co. show sales of $251,600,000 for fiscal year ended Oct. 31, topping previous year's record of $250,300,000 by about $1.3 million. Earnings, however, dipped to $8,330,000, equal to $1.55 a share, compared with $11,017,000, or $2.07 a share, in earlier fiscal year. Company officials say that costs connected with start-up of extensive new facilities accounted for more than total decline in company earnings. For fourth quarter, earnings reached $3,172,000, equal to 60¢ a share, against $2,197,000, or 41¢ a share, for same period of previous year.

●

Tasty Baking Stock Offered to Public

Investment banking group headed by Drexel & Co. has offered 110,800 shares of 50¢ par value Class A, nonvoting common stock of Tasty Baking Co., Philadelphia, at $20 a share. Reportedly, this is first public offering of Tasty Baking's securities. Baking firm has earned profit in each year since its incorporation in 1914, and has paid cash dividends on its common stock each year since 1915. Dividends for past 3 years have amounted to 62½¢ a share annually, with dividends so far this year totaling 46½¢ a share.

●

Stock Dividend Declared By Montana Flour Mills

Board of directors of Montana Flour Mills Co., meeting in quarterly session, has declared dividend of 25¢ a share on outstanding common stock, payable Dec. 10, 1961, to stockholders of record on Dec. 1.

●

Sedimentation Survey Discussed by MNF

Committee on agriculture of the Millers National Federation met in Minneapolis recently to discuss special sedimentation survey carried out by organization's technical advisory committee. Present were: **Carl C. Farrington**, Archer-Daniels-Midland Co., chairman; **P. Norman Ness** who was representing Atherton Bean of International Milling Co.; **Mark Heffelfinger**, Russell Miller-King Midas Mills; **Dean McNeal**, the Pillsbury Co.; **James E. Skidmore**, J. Allen Smith & Co.; **Don A. Stevens**, General Mills, Inc.; **Howard W. Taylor**, Pacific Millers Co.; **Donald H. Wilson**, Eckhart Milling Co., and **Richard D. Zumwalt**, Burrus Mills, Inc. Staff members in attendance were: **C. L. Mast, Jr.**, MNF's executive vice president, and **Gordon P. Boals**, director of export programs. Others present were: **O. A. Oudal**, General Mills; **Del Pratt, Jr.**, Pillsbury; **John Giertz**, Kansas Milling Co., and **Dr. John A. Shellenberger**, head of the Department of Flour and Feed Milling Industries, Kansas State University.

●

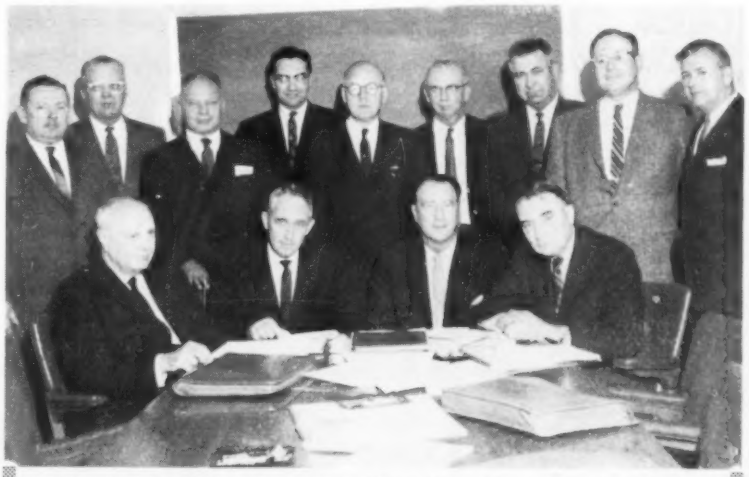
Canada:

Alvin Hamilton, minister of agriculture, believes that current season's exceptionally high price for durum could lead to undue increase in acreage of all major producing countries. Speaking before the Dominion-Provincial Agricultural Outlook Conference, Mr. Hamilton drew attention to the world shortage of durum, due mainly to poor yields in a number of countries which are the main suppliers including Canada. Nevertheless, he predicted, for the next two or three years there will be a market for all wheat which prairie farmers can produce, with specific reference to hard red springs. Further, he pointed out, the severe prairie drouth has sharply reduced grain production this year, and will adversely affect cash income from grains in the first half of 1962. Given good weather, however, some lost ground may be regained on next summer's crop, he added.

●

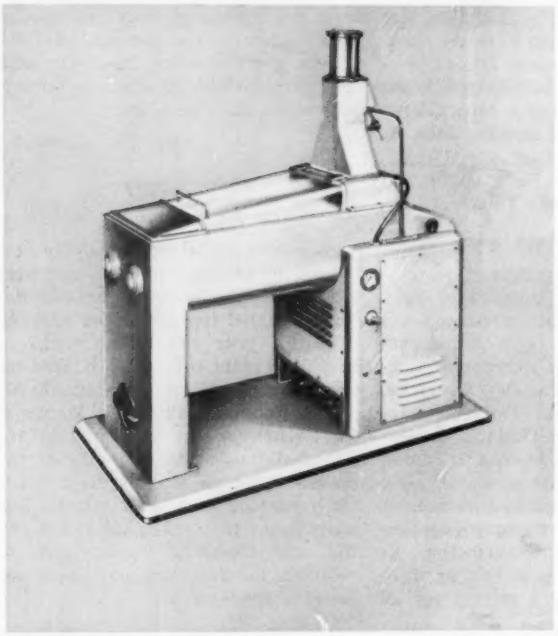
Wheat Visible Supply Continues to Decline

Canada's wheat visible supply continues to decline, and for the week ended Nov. 22 was 388,800,000 bu., or 5,200,000 bu. under the previous week. A year ago visible stocks on the same date were 424,100,000 bu. The current total shows 242,200,000 bu. in country elevators. Stocks in Seaboard positions amounted to 46,300,000 bu., with 4,800,000 of this in Churchill on Hudson Bay. Lower St. Lawrence River and Atlantic Seaboard port terminals hold 31,600,000 bu. and Canadian Pacific ports 9,900,000 bu. No Canadian wheat was in U.S. positions. «

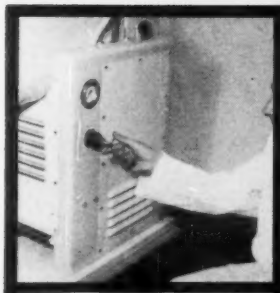


PRODUCERS AND EXPORTERS have launched a drive to keep U.S. wheat exports at record levels. Other meetings will follow the one during which this picture was taken, to foster closer cooperation in achieving the mutual goals of expanded markets. This session, held in the central office of Great Plains Wheat, Inc., at Garden City, Kansas, brought together representatives of both groups. Seated, from the left, are: W. W. Hyde, export manager of Cargill, Inc.; R. L. Lewis, board chairman of Great Plains Wheat; S. M. Alcone, vice president and general manager, Producers Export Co.; Clifford R. Hope, Great Plains president. Standing, left to right, are: A. Henry Becker, assistant vice president, Bunge Corp.; Otis Tossett, vice chairman of the board, Great Plains Wheat; F. H. Hediger, president, Garnac Grain Co.; Lloyd Knotny, Great Plains board member; James O'Neill, vice president, Continental Grain Co.; Herbert J. Hughes, member, Nebraska Wheat Commission; G. W. Egbert, board member of Great Plains; D. S. VanVort, Louis Dreyfus Co., and Henning Vontillius, assistant European director of Great Plains Wheat.

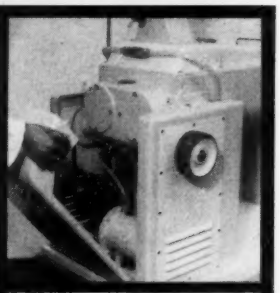
OCRIM



PNEUMATIC ATOMIZING DAMPENER TYPE NPD



2 Pressure-adjusting device with a manometer for the control of a sensitive and gradual apportionment of water.



3 Driving mechanism of the machine is incorporated into its base.

By a convenient moistening of the wheat before the milling process, lighter colored flours are obtained, the bran skin being made more elastic and less friable.
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General Mills Makes Changes In Top Echelon Positions

Top level changes at General Mills, Inc., plus retirement of a veteran executive, have brought Ford Bell—member of the firm's founding family and experienced food chain executive—to the board of directors. A brother of Charles H. Bell, who moved from GMI's presidency to board chairman Dec. 1, Ford Bell is chairman of the board and chief executive officer of Red Owl Stores, Inc., Minneapolis.

He also is the eldest son of the late James Ford Bell, GMI's founder, and has been in the food business 36 years. He began with Red Owl in warehouse freight handling, clerking in retail stores, and doing merchandise buying. Mr. Bell later moved into management of the food chain, serving as treasurer and vice president, then in 1936 became president and general manager. He moved to board chairman and top executive officer in 1956.

Ford Bell

L. F. Polk, Jr.

In other GMI changes, Louis F. Polk, Jr., comptroller since June 1, has taken on added duties of financial vice president, with responsibility for the departments of treasurer and commercial development. Gordon W. Bassett has been named treasurer, replacing Richard J. Keeler, who retired Dec. 1 after more than 41 years of service to General Mills. Both appointments were effective Dec. 1, when Gen. Edwin W. Rawlings took office as the firm's new president. Mr. Polk joined General Mills in November of 1960, working as special assistant to the comptroller's department staff. Previously, he was vice president and manager of operations for the Sheffield Corp., a subsidiary of Bendix Corp., in charge of research engineering, sales engineering, manufacturing, purchasing and industrial services for several Bendix subsidiaries and four Sheffield divisions.

R. J. Keeler

G. W. Bassett

Mr. Bassett joined GMI in 1931 as a grain accounting clerk and worked in Minneapolis 10 years except for a short period in the company's Great Falls, Mont., office. He was named chief grain accountant at Minneapolis and served in this position from 1941 to 1947. He became assistant secretary and assistant treasurer in 1947, and continues in these positions, in addition to serving in various financial capacities for several GMI subsidiaries.

The retired Mr. Keeler started with General Mills' predecessor, Washburn Crosby Co., in 1920 as a package department clerk, later transferred to accounting. When General Mills was formed in 1928 he became special accountant on the comptroller's staff, was elected assistant treasurer and assistant secretary in 1931, then to treasurer in 1947. He has served as chairman of the company's general credit committee and of its insurance committee, along with working as a member of the tax committee and employees' benefit board. «

Season's Greetings

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Wm. X. Clark
V. P.

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Tech. Dir.

L. R. Patton
Mgr. Milling & Baking Div.

Edward P. Hassler
Mgr. Sanitary Chemicals Div.

F. A. Baldauski
Mgr. Food Chemicals

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Sylvester A. Ryan
Ass't. Sales Mgr.

Warren Keller
Mgr. Flour Svce. Div.

Lyle P. Carmony
Mgr. Flour Mill Sales

M. R. Ander
Chicago

Vern Behan
Dallas

H. H. Bonham
Winnipeg

Jack Bozman
Atlanta

Allen M. Brown
Chicago

Paul G. Callison
Portland, Ore.

Paul M. Cormack
New York

W. J. Davis
Buffalo

James M. Doty
(Cnslt.) Kansas City

W. O. Edmonds
Kansas City

G. W. Grossarth
Kansas City

C. W. Harding, Jr.
New York

R. G. Heinzelmann
New York

W. Quincy Isaacs
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D. R. Lewis
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Mrs. B. Thompson
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President

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Should U.S. Supply Wheat, Flour to Communist China ?

What Is Meaning Behind Kite Flying What Are the Objections, Advantages

By F. C. Bisson

AFTER BEING moribund since the beginning of this year, the question of supplying U.S. wheat, and possibly flour, to Red China has again become a very live issue. It's a red hot subject.

Major bone of contention is fundamental. Should the U.S. deal with Red China? And if the answer is in the affirmative, what should be the modus operandi?

Many people fail to appreciate that prior to World War II and before the ascendancy of Communist influence in Asia, with one of the results being the split between Red and Nationalist China, the Chinese mainland ranked very close to the U.S. in the annual production of wheat.

Wheat Important Crop

Most people are inclined to think of rice rather than wheat as the only article of Chinese diet despite the fact that the total production and consumption of wheat by the Chinese was in the region of 900 million bushels a year.

But, as in other countries, there has been a "population explosion" in China. However, with a population now assessed in the region of 700 million, with 15 million more added each year, it is something more than an "explosion."

Coincident with the Chinese Mainland falling into the tight grip of Communism, it became virtually impossible to secure any authentic statistical data concerning crop production. The outside world is told only what the Chinese high command wishes it to be told and even less information filters through the Bamboo Curtain than through the Iron Curtain. On the other hand, anything the Communists want known is shouted from the hut tops and they become as voluble as bluejays.

Right now we are in a period of volubility as far as the Chinese are concerned. This change in tactics became evident to some extent early in 1961 when it became necessary to explain what had happened to the soybean crop and why there was such a marked decline in the movement of that commodity through the Suez Canal into Central European markets.

Anonymous sources in the U.S. Department of Agriculture were inclined at the time to "pooh pooh" stories of massive crop failure coming from highly reliable sources in Hong Kong.

But when the chips were down and the official data on the west-bound movement of soybeans through the Suez became available, thereby providing confirmation of earlier stories of damage from high temperatures and floods, a completely different slant was placed on the entire Red Chinese agricultural picture.

Australian-Canadian Deals

Purchases of large amounts of grain from both Canada and Australia brought the Chinese food shortage into sharper focus and made that shortage a conversation piece even in Washington.

There have been differing reports of just how much wheat is involved in the king-sized deals between China and the two supplying countries.

With regard to the Canadian deal, an editorial in the Manitoba Cooperator (May 4, 1961) published weekly by Manitoba Pool Elevators, can be looked upon as an authoritative source. The editorial spoke of the prospect of the sale of 217 million bushels of wheat to China and said further that this figure was "apart from the long term agreement announced in the House of Commons May 2 by Alvin Hamilton, agriculture minister, which covered a total of 186,700,000 bu. of wheat and flour." The editorial went on to mention that the terms of payment were "25% as cash and the remainder over a period of nine months" and that the quantities involved in the latter deal were to be taken over a period of 2½ years. And the Red Chinese buyers have been talking up more business since.

The transaction with Australia has been reported as involving 2,285,000 tons of wheat, including some flour, and reports have it that from the standpoint of down payment, the Chinese drove a harder bargain than they did with the Canadians . . . 10% down, another 40% in six months and the remaining 50% within a year from date of purchase.

In this connection, it is interesting to note that after hearing the reported terms of payment to the Canadians, the Australian negotiators went on record as stipulating that any further wheat sales to Red China would be negotiated on quite a different basis from the first ones.

U.S. Producers Involved

In their search for broader foreign outlets for grain grown by their members, two of the largest U.S. producer organizations, Great Plains Wheat, Inc., and Western Wheat Associates, Inc., sent delegations into the Orient to get first hand information on potential markets. Both delegations spent a short time in Hong Kong.

More or less coinciding with their return to their respective headquarters, Garden City, Kansas, and Portland, Oregon, several articles appeared in the Chicago Daily News under the by-line of a staff member of the publication's foreign service. The first of these stated positively that both Middle Western and Western wheat growers, as well as members of the U.S. government service, had been approached by Red Chinese of-

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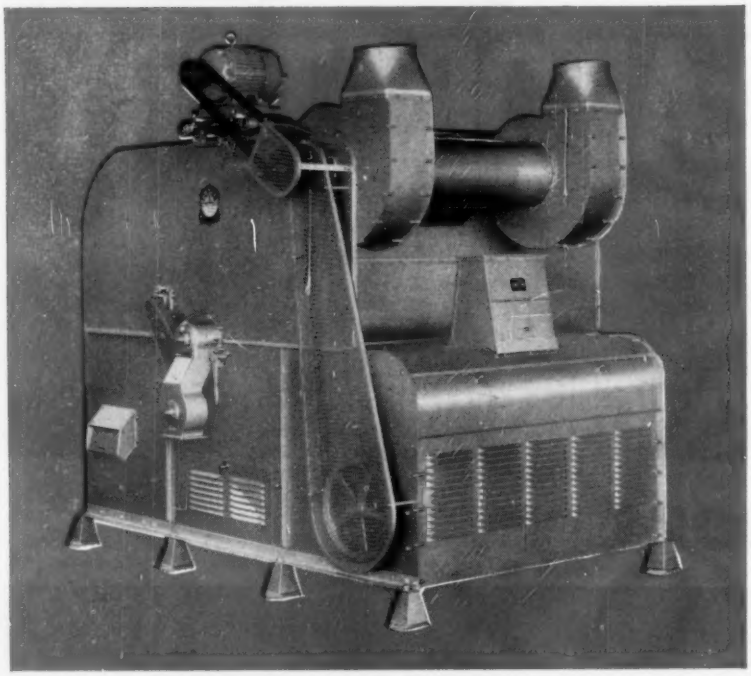

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ficials with regard to making deals for the purchase of large amounts of wheat and other grains.

The amount mentioned was six million tons to be taken during the coming eight months.

Chinese Talks Denied

Clancy Jean, who represents Western Wheat Associates in Washington, was quoted in a Chicago Daily News story, by-lined by farm editor George Thiem, as saying that he was in Hong Kong at the end of October and that Orville L. Freeman, secretary of agriculture, was there, too. But, he said, "We didn't talk to any Chinese Communist officials . . . we'd be skating on thin ice if we talked to representatives of an unfriendly nation. We did confer with people in the U.S. Consulate, mostly ex-China hands."

Readers of THE MILLER have already seen in the Nov. 27 issue the denials of Clifford Hope, president of Great Plains Wheat, Inc., and Charles H. Burch, director of information, that there were any actual meetings or talks with Mainland China officials on the subject of possible sales of U.S. grain to Communist China. And George McGovern has emphatically denied that anything is on the fire (See page 32).

In view of the strong denials by Mr. Hope, Mr. Jean, Mr. Burch and Mr. McGovern, this commentator is convinced that the talks with Red Chinese officials did not take place as reported. It is possible that the conferences referred to by Mr. Jean as being with "ex-China hands" might have been inadvertently identified as being with "Chinese officials."

Basic Question

Entirely apart from "who talked to whom," the important point is the basic question whether or not the U.S. government or any U.S. citizens as individuals or as a group should enter into an arrangement by which Red China will come into possession of wheat or any other grain grown in the U.S.

Necessarily, there are a number of different schools of thought on this highly controversial matter. Probably the most vocal are those who point to the statute that "forbids trading with the enemy." A discussion on that score always leads nowhere for the reason that due to its academic nature, someone is bound to ask: "When did we declare war on Red China?" This brings the inevitable answer that there is "no difference between a cold and a hot war."

Then there are those who argue

emphatically that present law prohibits the sale of commodities under subsidy to what are usually referred to as "unfriendly nations." No one can very well argue with that point of view though Congress can repeal the law whenever it wishes to do so.

West Coast Fears

Still another segment of opposition to wheat deals with Red China fear that sales would denude the area west of the Rocky Mountains of the wheat they need. The wheat is needed to cover normal flour sales in the domestic market as well as to regular export outlets.

Such a point is well taken but seemingly might be handled by placing definite limitations on exports of government-owned wheat during the lifetime of any such agreements with Red China, that is, of course, if such agreements are given official sanction.

Likewise, those West Coast millers who were placed at a disadvantage in the domestic flour market as a result of the government's action of a year ago when adjustments were made that placed wheat export subsidies on a uniform basis, irrespective of location, have a good point. Perhaps they could be reconciled to the idea if some readjustment could be made in the current subsidy levels on wheat, plus a stipulation that all wheat exports to Red China be in the form of flour or processed in some way.

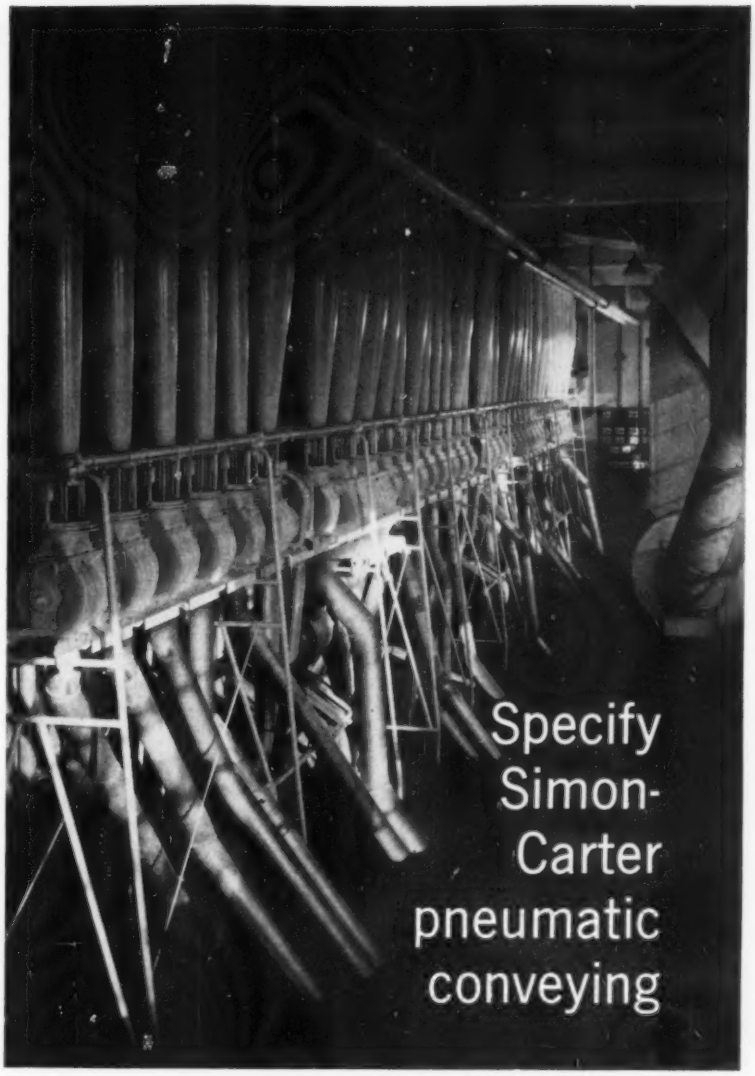
Opponents of any deals with Communist China under PL 480 are calling attention to the fact that such agreements are supposed to be made only with those countries that have no available funds. They point to the Canadian and Australian transactions wherein good, hard currency, for the down payments at least, was forthcoming.

Stumbling Blocks Noted

But the big question is: "What will Chinese Communist leader Mao Tse-tung and Premier Chou En-Lai have to offer when bill collectors from Canada and Australia knock on the door of their Peiping pagoda to pick up subsequent installment payments?"

Another major stumbling block to doing business with Red China is the Communist insistence that a prelude to negotiations of any kind must be "giving up" Nationalist China.

If the famine on the mainland is as serious as everything indicates, and if the so-called talks in Hong Kong represented Communist kite-flying, as has been suggested, then this is on a



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China (Continued)

par with a starving man dictating the kind of food he will accept.

President's Views

As to how the White House feels on the matter, President Kennedy gave his views to the press early in 1961. He said there was no indication that Red China wanted any help from the U.S. and he amplified his general observation by saying: "If people's lives are involved and if there is a desire for food, the U.S. will consider it carefully."

Admittedly, this was not a very firm commitment, there being two "ifs" involved, plus nothing more than a promise of "careful consideration."

That statement was made by the President nearly a year ago and now he may have some more positive views on the subject.

Incidentally, there are quite a few people who feel that President Kennedy already has sufficient emergency powers to authorize dealing directly with Red China without any additional enabling legislation.

To sum up, this commentator feels that if mass starvation will result unless the U.S. furnishes the Red Chinese with food, then the humanitarian aspects will far outweigh the matter of difference in political ideologies.

However, this view would be hedged by stipulating that supply should not be handled as a gift. Nor should the U.S. run the risk of supply becoming just that by giving the Red Chinese a credit card which they can toss out the nearest window.

Major Advantage

The commune system on the Chinese mainland has obviously fallen apart at the seams. Could be that this is a golden opportunity to prove to the Chinese people that the capitalistic system has ample supplies at its beck and call to feed them in their misery. And it could be a lesson to other peoples, teetering on the brink between the private enterprise way of life and Communist domination, that the West at least does not fear or suffer from starvation.

It could also be a good chance to sell some wheat and flour for good, hard cash. And that cash could be used to buy goods from other peoples. That, in any language, is reciprocal multilateral trade. «

Letter to the Editor . . . From a Cereal Chemist

— Sedimentation Test —

The proposal to use sedimentation as an indication of wheat quality for payment of premiums has raised considerable comment in the industry, much based on the contention that the sedimentation technique does not indicate actual quality as shown by the baking test.

Richard D. Zumwalt, Burrus Mills, Inc., Dallas, Texas, discusses the problem at length in the Oct. 16 issue of THE MILLER, and cites detailed evidence to show lack of correlation between wheat and flour quality as demonstrated by baking tests and sedimentation values.

Since Mr. Zumwalt is citing detailed laboratory data for the evaluation of the various samples, a study of this data is interesting and numerous comments and questions immediately become apparent. It is assumed that all samples were laboratory milled and tested in a comparable fashion. Some of the points for consideration are:

1. The ash content of the flours ranged from a low of 0.394 to a high of 0.514. This difference would seem to be significant in the evaluation of the samples themselves, for this would be a range from a short patent to a stuffed straight grade flour. It would seem from the data presented that there were two and possibly three low ash samples:

Bin 14.....0.394 ash
Bin 27.....0.42 ash
Bin 16.....0.449 ash

and flour high ash samples as follows:

Bin 12.....0.50 ash
Bin 28.....0.49 ash
Bin 25.....0.514 ash
Bin 15.....0.479 ash

Is such a variation in flour ash to be expected in experimental milling? If so, it would seem that this would markedly affect the end results, particularly the color of the finished bread. If the ash values indicated high ash content wheat, certainly such material should be excluded from the final mix.

2. The protein content of the flour samples varied from 10.64 to 13.31, yet each was put through the same test procedure in the evaluation and in bread volume rating, all rated "good," which would seem to indicate that protein content was of little consequence in the volume of the bread obtained.

3. In the farinograph data, the peak of the farinograph curve is given as:

6 minutes for Bin 12 and Bin 28 which rated as 4 and 3
5.75 for Bin 14 which rated 1
6.5 for Bin 25 which rated 1
5.0 for Bin 27 which rated 1
5.25 for Bin 16 which rated 1
6.25 for Bin 15 which rated 1

which would seem to indicate that peak time is not particularly important in wheat quality evaluation.

The tolerance values ran 6.25 and 6.0 for Bins 12 and 28 which rated poorest.

All the better samples rated 7.0 or higher, indicating flour must have a mixing tolerance of 7.0 or better.

In the case of M.T.I. the poorest samples, Bin 12 and Bin 28 rated 53 and 63 respectively, which might indicate that 53 is the highest M.T.I. allowable, but Bin 27 also rated 53 and rated good, or No. 7. Likewise the two poorest bins rated 60 in valorimeter value, while the better bins rated 58—57—57 and 62 and 64, which would seem to indicate that valorimeter reading is not particularly selective in rating the samples.

In the actual bread quality evaluation all samples rated good except Bins 12 and 28 which rated "fair." These, however, were apparently used to make up the mill mix, rated "good," indicating enough tolerance in standards to include a goodly portion of poorer wheat.

The baking test, the principal criterion of quality, itself becomes suspect because of the difficulty of accurate duplication. Several suggestions immediately become apparent:

- Check on the accuracy of the bake test by making a large number of replicate bake tests from day to day to note variation.
- Submit the same samples, or a series of similiarly evaluated samples to another laboratory for evaluation and comparison of results.
- Study commercial bake shop results on a series of lots of flour from various types of wheat similarly evaluated to try to correlate laboratory evaluation data with results obtained in actual shop practice. «

The identity of the writer, who desires to remain anonymous, is known to the Editor.

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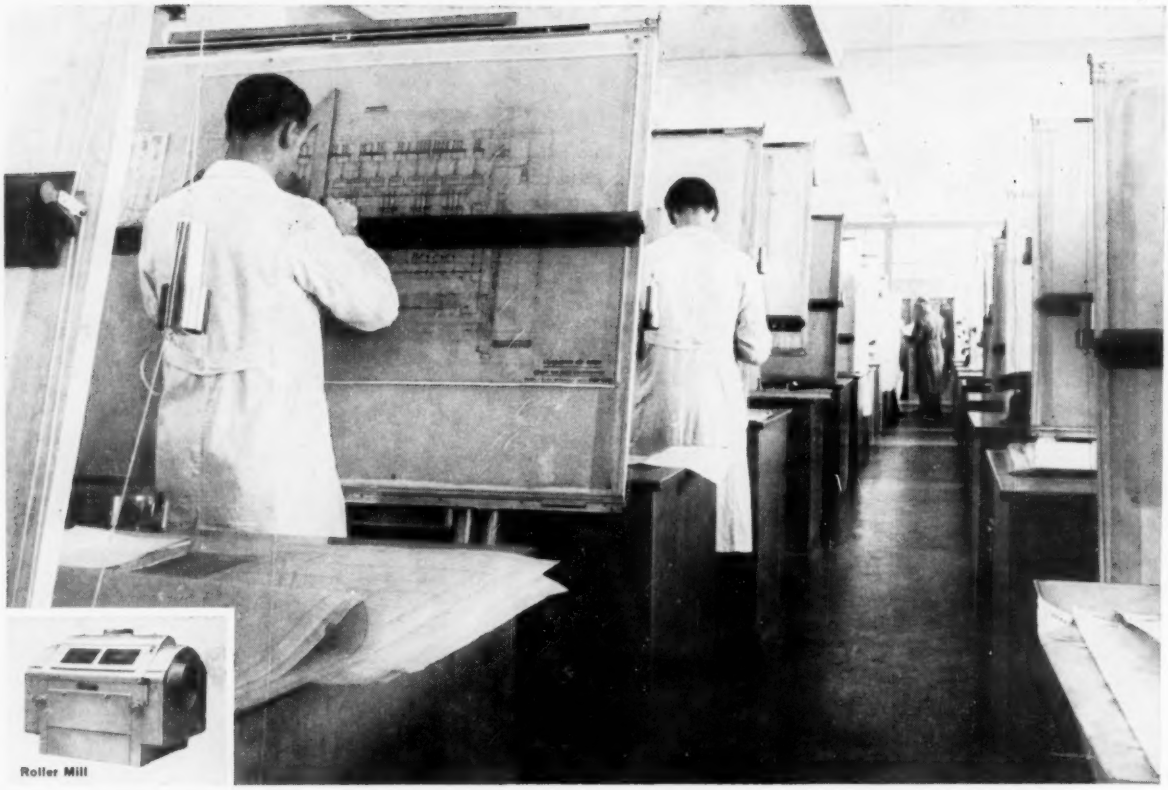

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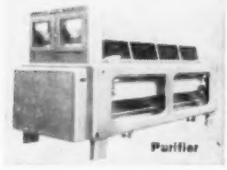
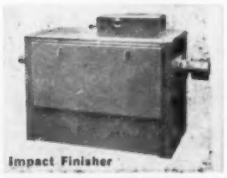

Purifier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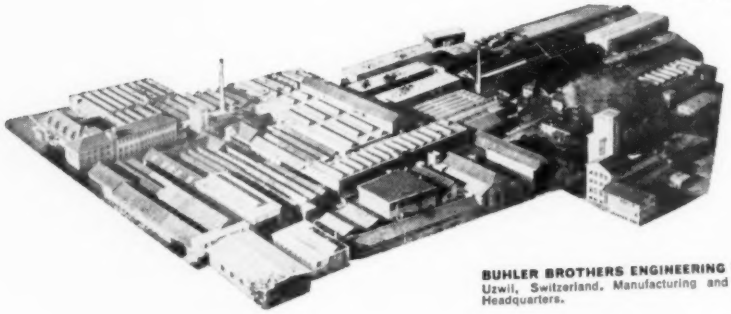

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Part XIX

The Flour Milling Industry

An Economic Study of Excess Capacity

By Dr. Donald A. Markwalder

AS WE CONTINUE to study concentration in the flour milling industry, it appears that in 1929 small plants with a daily capacity of less than 400 cwt. produced approximately 8% of total U.S. flour output. By 1956, however, production of these firms had declined to less than 3% of total output.[1] It might thus seem that concentration figures for both 1929 and 1956 are too high, and further, that the 1929 figures are in error by a greater amount than are the 1956 figures.

This is not necessarily correct, however, because no allowance has been made for the fact that plants of the largest firms are larger and operate at a higher percentage of capacity than the average of all plants with more than 400 cwt. capacity.

For example, in 1956 plants with a daily capacity between 400 and 2,400 cwt. operated at an average of only 69% of capacity, while all larger capacity groups operated in excess of 93%. At the same time, only six of the 89 plants among the 10 largest firms had a capacity of less than 2,400 cwt.

Thus, if we wish to interpret our capacity concentration ratios as output concentration ratios, those for 1929 are probably two or three percentage points too high, but those for 1956 are approximately correct or a percentage point or so too low. Belief that the 1956 capacity concentration ratios are almost exact output concentration ratios is strengthened by the output concentration ratios for 1947 and 1954, shown in Table 1.

TABLE 1. Concentration Ratios for Flour and Meal Industry as Measured by Value of Shipments.

Year	Companies	4 Largest	8 Largest	20 Largest
1954	694	40%	52%	68%
1947	1,084	29%	41%	57%

Source: U.S. Department of Agriculture, The Marketing and Transportation Situation (Washington, D.C.: Government Printing Office, November, 1957), p. 28.

It is evident that no matter what number of firms between one and 10 we choose to measure concentration, it did increase between 1929 and 1956. The same results would be obtained if 15, 20 or 30 firms were used. Not only has concentration increased but—except for the largest firm, General Mills, Inc.—the amount of capacity owned by a company at any rank increased between 1929 and 1956.

General Mills is an exception to the foregoing because its research expenditures led to opening of more profitable opportunities in other industries for the period under study.

Care must be used in interpreting these concentration ratios computed nationally because family and bakery flour are distinct segments. Bakery flour may be classified further into hard and soft wheat flour. If concentration ratios were to be computed for bakery flour, they would be very similar to those for the entire flour market. This is not true of family flour. Available evidence indicates that about 50% more of the production of the Pillsbury Co. and General Mills consists of family flour than is true of the industry generally.

Because soft wheat production is more widely dispersed geographically than hard wheat production, concentration is lower in the soft wheat flour segment of the industry than in the hard wheat portion. In various regional markets concentration is higher than nationally, although probably not

[1] Bureau of the Census.

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Milling Margins (Continued)

considerably higher, because each of the five largest companies operates in most—if not all—regional markets. The somewhat geographically isolated Pacific Coast region appears to be the market in which concentration is greatest.

Margins Affected

Not only has excess capacity had a profound effect upon structure of the flour milling industry, but it has also substantially affected margins and sales practices.

If the industry had been oligopolistic and entry difficult, it is possible margins and profits would have been maintained in spite of excess capacity; however, in the essentially competitive flour milling industry[2] excess capacity has been accompanied by strong downward pressure upon price (or margins) and profits.

In many industries—especially those highly vertically integrated — prices, gross profits and net profits are very highly correlated. Such is not the case in flour milling. Flour prices may be high and milling margins and profits low, or vice versa, due to wheat or millfeed prices and price fluctuations. In such circumstances[3] it is evident that flour prices in and of themselves are of little significance either in determination of milling profits or for an understanding of the industry. Of course, other factors exercise a significant influence on profits, but milling margins are the most important.

To compute a milling margin it is necessary to know price of the wheat used, the price at which the flour is sold, and price of the byproducts. If flour is not sold in bulk, it is also necessary to know cost of the containers. Approximately 2.35 bu. of wheat are required to produce 100 lb. of straight flour and 41 lb. of bran and shorts.

Because bran and shorts are produced in equal proportions, there are 20.5 lb. of each for every 100 lb. of straight flour. Millfeed (bran and shorts) is treated as an offset against cost. The milling margin is determined as follows:

1. Add the market price of 20.5 lb. of bran and 20.5 lb. of shorts to the price received for 100 lb. of straight flour.

2. Subtract the cost of 2.35 bu. of milling quality wheat. If the flour being produced is for bread, this wheat price will nearly always include a protein premium.

3. Subtract the cost of containers used and, if family flour is being milled, the cost of enriching ingredients.

This formula gives us the milling margin for 100 lb. of straight flour. If a patent flour is being produced, 2.35 bu. of wheat will be milled into 65 to 95 lb. of patent flour and five to 35 lb. of clear flour. Clear flour is usually treated as an offset against costs.

Gross Margins Change

As a result of wheat speculation and changes in the price of byproducts, gross margins will differ. Bakery flour normally is sold for delivery over 120 days at prices fixed on date of sale. Byproducts most often are sold as produced. So, when millfeed prices are rising, milling profits increase, even though flour output and margins are constant. Only when wheat is purchased and equivalent quantities of flour and millfeed sold on the same day are milling margins a reliable indicator of profitability of the entire transaction.

With a positively sloped supply curve we would expect milling margins to rise as demand increases and fall as it declines. Since the industry has been competitive,[4] this has, in general, been true. When demand and output increase, margins rise, and vice versa when demand declines.[5]

Because milling costs[6] have, in general, been rising since World War I and capacity has not been increasing, we would expect the trend of margins (in current dollars) to be upward in spite of the existence of excess capacity. This has been the case. In July, 1917, flour prices were stabilized by the government. Each miller was allowed to charge a price which covered his costs plus 25¢ a barrel profit.[7] The following year the cost plus 25¢ arrangement was dropped, and margins were fixed at $1.10 bbl.[8]

Prices 'Decontrolled'

This arrangement lasted until 1920, when wheat and flour prices were again decontrolled. Then followed the low point of milling margins for the entire period, the 1920-21 crop year,[9] when only 190.5 million hundredweight of flour—66 million hundredweight less than during the previous crop year—were produced. On the other hand, margins reached a high during 1947 and averaged $1.40 cwt. for the entire year.[10] This was the year during which output reached an all-time high.

With exception of the period immediately following World War II, milling margins since 1920 have, as a result of excess capacity, been so low as to make it nearly impossible for firms in the industry to earn normal profits.

Thus, when the one apparent chance arose to legally regulate margins—and thus secure normal profits in spite of excess capacity—it was avidly seized upon. This opportunity seemed to arise from enactment of the National Industrial Recovery Act, in 1933. Work was begun on the Code of Fair Competition for the Wheat Flour Milling Industry in the summer of that year. Scores of drafts and

[2]Despite fairly rapid decline in the number of firms in the industry, it still seems to approximate quite closely the competitive model because, **in structure:** (1) There are many firms in the industry; (2) concentration is only moderate; (3) product differentiation is significant only in the smaller and declining family flour segment of the industry; (4) entry is easy; **in performance:** (1) Because no firm or group of firms has any significant control over prices, margins fluctuate freely with changes in demand.

[3]For industrial markets generally, margins are more significant in judging market performance than are prices. See "Monopoly and Competition in the United States of America" by R. B. Heflebower in "Monopoly and Competition and Their Regulation," ed. Edward H. Chamberlin (London: Macmillan, 1954), p. 123. This point is more fully developed by Alfred C. Neal in "Industrial Concentration and Price Flexibility" (Washington, D.C.: American Council of Public Affairs, 1942).

[4]In the bakery flour segment the significance of conjectural variation has been very slight. Firms in general have attempted to sell bakery flour at prices approximately equal to their subjective evaluation of marginal costs, and the author knows of no persuasive evidence indicating that the small firm segment "represented a persistently disruptive factor in the market: The great impetus for stabilization, on the other hand, emanated from the oligopolistic (large firm) segment" (Vatter, p. 237). As a matter of fact it appears to the author that just the opposite is true. Of all the sales of flour made to the federal government under Public Law 480 in recent years, only a fraction of 1% has been sold by firms having a capacity of less than 1,000 cwt. The flour is sold on the basis of competitive bids, and large firms quote the lowest bids.

[5]The only significant modification of this statement is that a slight allowance must be made in milling margins for normal seasonal fluctuations in millfeed prices. That is to say, when flour prices are quoted for 120-day delivery, not only are current millfeed prices taken into account, but also an allowance is made for the probable course of millfeed prices over the 120-day period for which the flour is to be delivered. Since millfeed prices usually reach seasonal lows during the summer and early fall, we would expect slight allowances to be made for millfeed declines on flour sold for 120-day delivery during the spring months, and slight allowances to be made for millfeed price increases on flour sold for 120-day delivery during the fall. However, since such allowances normally do not exceed 5c per 100 lb. of flour, they by no means vitiate the conclusion that margins rise and fall with demand.

[6]For the decade ending in 1922 total nonmaterials costs averaged only 23c. This is in contrast to a corresponding figure of 75c cwt. for the nine crop years ending in 1957.

[7]Gray, p. 77.

[8]Ibid., p. 80.

[9]The margin data for this crop year are very scanty, but the lowness of margins can be inferred from the combined profits of Pillsbury and Washburn-Crosby for the 1920-21 crop year of $50,000. During no other year were the combined profits of these two firms nearly so low.

[10]Blackmore, p. 7.

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months of almost continuous negotiation between industry and government officials finally resulted in a code which was acceptable to both sides in June, 1934.

The primary source of disagreement within the industry concerning provisions of the code was over the number of hours per week each mill would be allowed to operate.[11] In general, the largest firms had the lowest cost plants and found their most profitable output as that which would be produced when operating six days (144 hr.) a week. The smaller, high-cost mills, serving limited geographical markets, wished to restrict running time per week to 96 hr.

A vote conducted by the Millers National Federation found that, on a basis of the number of companies voting, the 96-hr.-per-week restriction was favored, while on the basis of output, the 144-hr. operating week won.[12] This is clear evidence that the smaller mills had higher costs and favored restricting running time to a shorter period than did the larger mills.[13] In the code, as finally approved, there was no restriction on running time.

[11]Vatter, p. 264.

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Point of Contention

The main point of contention between the committees, one representing industry and the other the government, was opposition by the latter to the position which industry representatives took concerning "below cost" sales. The industry advocated an absolute prohibition against sales made below the minimum "cost" of a barrel of flour, and proposed that the minimum cost of a barrel of flour be determined as follows:[14]

1. Add the mill carlot price of 4.6 bu. of wheat on the day which the flour is sold.

2. Subtract the market price of 76 lb. of millfeed. This makes allowance for an invisible loss of 4 lb. per barrel.

3. Add a processing margin equal to 85% of the average processing and selling costs of mills in the industry.

The uniform package differential was also to be adopted; the time period for which sales were to be made was limited, and carrying charges were to be made for flour sales not for immediate delivery.

Competition in the industry had been strong and margins narrow. Thus, when this apparent chance to legally regulate prices in the industry arose, few of the competitive devices used to shave prices were to be left unregulated. Package differentials, carrying charges, and time limitations upon the period for which sales could be made had been points of contention within the trade since at least the early 1920's.

Attempting to prevent any sales from being made for a processing margin which did not cover 85% of the average processing and selling cost of the firms in the industry was really the most inflexible and restrictive provision of all.

The structure of flour prices is such that sales of flour of the same—or similar—quality take place at widely varying prices. Nevertheless, these price differentials usually correspond to cost differentials of one sort or another. For example, large sales of flour to bakeries or public bodies seem to include only nominal brokerage costs and no advertising costs of any kind. These sales then establish a floor upon which the flour price structure rests. In effect, prohibiting low price sales meant raising the whole flour price structure. It also meant many sales had to be made at prices including costs which should not properly be allocated to these sales.

The code, as finally adopted, did not prohibit below-cost sales, and it did not restrict the number of hours which a mill could operate per week. It did, however, establish package differentials, a 90-day time limit for sales, and carrying charges on all sales not made for immediate delivery. These provisions were alleged to be moderately effective.[15] In 1935, a year after the Flour Milling Code was adopted, NIRA was declared unconstitutional.

Bakery Flour Margins

Margins in the bakery flour segment have been lower than in family flour. But this does not mean bakery flour has, on the whole, been less profitable, because packing and selling costs are lower than for family flour. It is undoubtedly true that profits of the firms for which mill-brand family flour sales now comprise over 20% of total flour sales have been slightly higher than those of the industry generally. This means only that these firms have been the most successful in the family flour field and best adapted for survival, rather than that milling family flour has been more profitable than milling bakery flour.

It must be kept in mind that most companies which have exited since 1920 were predominately family flour firms. It is, however, true that margins and profits of family flour firms have been slightly more stable than is the case with exclusively bakery flour firms.

It is not only growth of the baking

[12]THE Northwestern MILLER, Dec. 13, 1933.
[13]Vatter (p. 268) thinks this "poses for the theoretician the problem of reconciling competitive enterprise with restrictionism." It seems evident that Vatter is led into making this clearly erroneous statement because he mistakenly identified the small firm as the competitive firm. If a small firm is the only seller in a geographically isolated market, it is clearly less competitive than is the large firm which, along with many other firms, sells in several large markets.
[14]THE Northwestern MILLER, Oct. 18, 1933, p. 181.
[15]THE Northwestern MILLER, Sept. 19, 1934, p. 753.

industry—and consequent transformation of flour from a differentiated to an undifferentiated product—which is alleged to have been detrimental to flour milling margins, but also the increasing size of baking companies.

The first phase of the merger movement in baking, dating from 1907 to 1920, was one of local and regional mergers. The 1920's were the decade of national consolidations.[16] It was during the 1920's that mergers brought about formation of what are today the four largest baking companies in the U.S. One reason for the formation of these national companies was to increase their bargaining power with suppliers.[17]

The extent to which the bargaining power of the big bakers resulted in price reductions for flour over and above any cost reductions is unknown, but it does not seem to have been very large. However, the big baking companies did buy flour at lower prices than their smaller competitors, estimated in 1925 at 30¢ cwt. lower.[18]

It is certain, however, that the big baking companies bought flour at least as cheaply as anyone else, and that advertising and brands did not influence their purchases, as had been the case with some of the smaller baking firms. Even if the large baking companies did not exercise any monopsonistic power, they bought skillfully and at the lowest prices obtainable.

This alone was enough to reduce milling margins and profits. There is no doubt that Slater is correct when he states, "The conditions of supply and competition in flour milling are such that it has been a low profit industry, the control of which would not materially improve the costs of bakers."[19] «

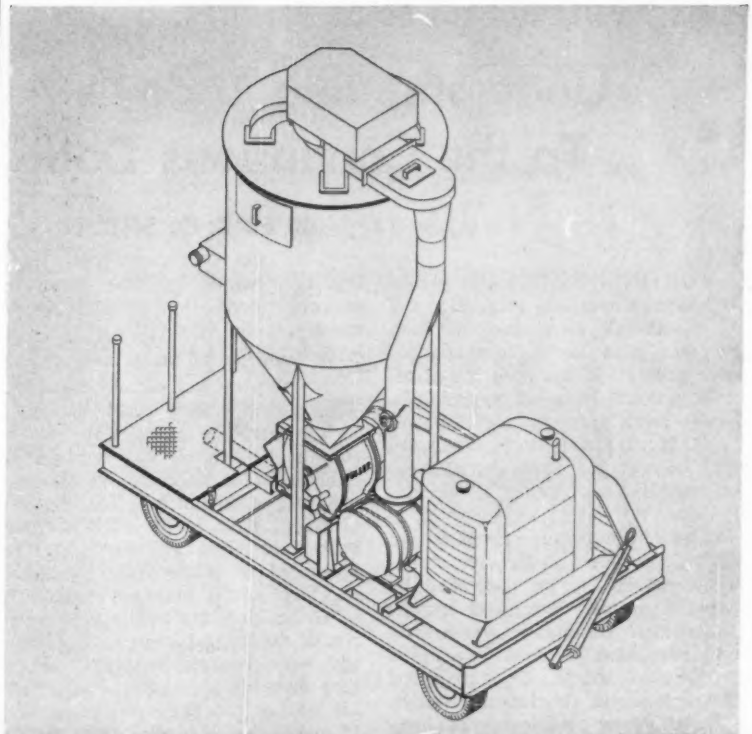
[16]Panshar, p. 236.

[17]Ibid.

[18]Federal Trade Commission, "Competition aand Profits in Bread and Flour," Senate Document No. 98, 70th Congress (Washington, D.C.: Government Printing Office, 1928), p. 346. In addition, the big baking companies have been given allowances for advertising, warehousing, brokerage functions, etc.

[19]Slater, p. 42.

Sales practices and terms of sale, as they relate to excess capacity in the flour milling industry, will be covered by Dr. Markwalder in Part XX. He will begin by taking up the subject of selling on consignment, a method indicative of excess capacity and very low milling margins.



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Dough Development and Baking Chemistry:

Understanding Today's Applications To the Continuous Dough Process

By ERIC G. SNYDER

IN CONTINUOUS DOUGH MAKING, energy necessary to develop the gluten network is applied in much less time than in the conventional batch process. It has been stated repeatedly that 0.35 to 0.4 h.p. min./lb. dough gives optimum development (1, 2). It would be simple to control this, but now it appears that this figure may not hold under all circumstances.

When production schedules are fixed, development in the conventional process has to be controlled by chemical means: Proteolytic enzyme and bromate. Continuous dough making allows more freedom. In addition to chemical means, the rheological phases of gluten development can be adjusted. Proper combination of chemistry and rheology actually may permit an appreciable energy saving. If early hopes based on work done by the British Baking Industries Research Assn. (1) materialize, this saving may amount to 50% of these 0.35 h.p. min. To accomplish this, one must take full advantage of our understanding of what gluten development means.

Very much oversimplified, gluten development consists of:

1. **In hydration of flour**, the heterogeneously arranged gluten structure is unravelled so that its inner-molecular configuration becomes accessible.

2. **Orientation** of the protein chains to more or less parallel lamellae. The protein chains react like coil springs to pulling action of the mixer, and the polypeptide chains begin to slide along each other. The cross-linkages, of which the -S-S- are the strongest, have to "give." They are broken or yield to interchange, as illustrated so instructively by Sokol and Mecham (3). In dough breakdown by overmixing, the polypeptide particles of the alpha-1 component of gluten have become separated. More than interchange has happened; there are no—or too few—S-linkages left. If such a dough is allowed to rest, it will recover as new S-bridges are being formed (4).

3. **Finally**, in the third phase of development, a "firming" of the newly formed network takes place by re-establishment of a complete cross-linkage system. In this way ground-structure of the cellwalls is formed, which must be firm and elastic enough to retain the increasing gas volume.

Increase of Elasticity

Oxidation plays a major role in this step. Dough elasticity increases and the dough's tendency to viscous flow decreases.

With this understanding in mind, what possibilities does the continuous process of dough making offer which the conventional batch process does not have?

In the hydration step, up to ⅓ of the total flour is exposed for an extended time to plenty of water under conditions where there is no competition for water (5). This results in much better hydration than possible in the conventional batch process.

In addition to existing disulfide linkages, those SH groups become exposed which in dry flour are hidden so thoroughly that analytical methods are unable to show their presence (3). Development begins at the liquid sponge stage. During the several hours of this stage, the fermenting yeast creates a reducing climate which, it may be assumed, leads to reduction of disulfide and further relaxation of the protein macromolecules (1).

It appears now that the rheological properties of dough are directly related to the number of disulfide bonds of the gluten network and to the rate at which they can interchange with sulfhydryl groups (6).

With this understanding, $KBrO_3$ action does not belong in liquid sponge. Oxidants are wanted later, in the final phase of dough development, when the new gluten network must be fixed and set.[1] Rather, at this earlier point, reducing agents are needed to break disulfide bonds and to increase the rate of their interchange. Data published by Yates (8) and by the British Baking Industries Research Assn. (2) suggest the practicality of adding reducing agents to the liquid sponge. They increase extensibility and reduce resistance of the dough. Sodium metabisulfite is effective but, of course, not permissible. Cysteine is actually being used in a so-called "dough-improver" (9). It may be possible to use yeast under conditions so that a controlled amount of reducing agent, glutathione

Stepping from the old style, slow speed mixer to the high speed mixer of the conventional batch process has meant gluten development by mechanical means, replacing development by long-term fermentation. What this signifies in continuous dough making, where a combination of mechanical with biochemical development is possible and advantageous, is the subject of Mr. Snyder's paper. The author is consultant to American Machine & Foundry Co. His paper is presented in cooperation with the American Association of Cereal Chemists. He wishes to express appreciation to the laboratory and personnel of AMF's Union Machinery Division for supplying much experimental data used in in preparation of his material.

[1]The principle of using protectively coated oxidant (7), which becomes activated only during the intensive kneading operation in the developer, appears to provide the answer to the problem of how to incorporate the oxidant and have it act only in the late "firming" stage of dough development.

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or whatever it is, is released—in other words, to do what nowadays the baker, using active dried yeast, carefully avoids by watching the temperature of the yeast reactivation.

Proteolytic activity in brew and liquid sponge helps to provide desirable amounts of amino acids for the flavor yielding Maillard reaction. Added Asp. Oryzae protease used in a bread formula, where 10% of a mill-protein fraction was added to the liquid sponge, was effective in spite of the relatively high salt content of the sponge. It resulted in distinctly improved crumb structure and texture.

Incorporation of the balance of the flour in the continuous dough process employing the liquid sponge principle is done under pressure. This promotes rapid hydration. It also causes all CO_2 to go into solution and also a good deal of the air which is occluded with the dry flour. When the pressure is released at the developer exit, this gas functions as the innumerable almost microscopic nuclei of the gas cells which are responsible for the fine-porous crumb structure of continuous bread, its greater tenderness and shadow-free whiteness.

Establishment of the final gluten network takes place in the developer. The pulling and stretching of the dough let the polypeptide chains slide along each other. Energy requirements for this should decrease with an increasing number of disulfide linkages having been reduced previously, and with interchange having been facilitated by numerous SH groups now available.

The intense shearing action in the developer which exposes new surfaces of the flour particles makes additional sulfhydryl groups available to interchange and formation of more disulfide linkages (10).

The final step of development is re-establishment of a crosslinkage system strong enough to hold the expanding gas in numerous small cells. Again, leaving aside the less rigid hydrogen bonding and other secondary linkages, the -S-S- crosslinkages appear to be the main factor. In addition to those which were never reduced, but simply transposed by interchange, new ones are formed by oxidation. To what extent added oxidant acts directly on SH or via mediators must remain open. Thioctic acid and thioctic monoxide, on the presence of which Dahle and Sullivan reported (11), may be such mediators.

Addition of Bromate

Bromate is added as late as it can be mixed into the dough; that is, in the liquid sponge process at the time of incorporation of the second part of the flour. Oxidation is not wanted until the dough leaves the developer. Continuous dough at this point is much softer than conventional dough. Only then should the gluten network firm and become set.

It has been suggested that the faster acting iodate, or at least high IO_3/BrO_3 ratios, would do better in continuous dough. Laboratory experiments with the Brabender Do-Corder do not indicate this. Iodate is probably too fast. Bromate is just right, and the amount needed is well within federal standards.[2] The extraordinary speed of sulfhydryl oxidation by iodate in contrast to the much slower bromate action has been measured in model experiments with cysteine, glutathione and thioglycollate by Hird and Yates (13).

However, there are many details of continuous dough development which need additional clarification and support from further experimental data.

[2]The earlier assumption that "best continuous operation requires roughly twofold as much oxidation as conventional" (12) proved erroneous.

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Experimentation with machines producing at the rate of 6,000 lb. of dough per hour can be costly. Pilot equipment of the type described by Fortmann and Ballard (14) can be very helpful.

To avoid interruption of continuity in this description of dough development, we have not discussed a number of practical points which are of great importance for the trouble-free operation of continuous dough making equipment. Although practical experience on which the following recommendations are based was acquired primarily in fieldwork with the Amflow equipment and process, it is believed that most of the points made are more generally applicable.

The addition of up to ⅓ of the total flour in the brew make-up, which means that there is no longer brew but liquid sponge, results in a high viscosity and less gas escape. Excessive foaming can result, which would interfere with pumping and reliable metering of the liquid sponge. This is prevented by addition of all the salt right at the start, and by holding the liquid sponge temperature low, starting at 84-85° and dropping it within two hours to about 80°. Sugar is added step-wise; the final addition should be made only ¼ hr. before incorporation of the remainder of the flour. This not only helps to prevent excessive foaming but also results in increased sugar efficiency and better proofing, and it does not affect taste.

Softening point of the shortening used is important. Locally rendered fat, which may have a softening point as low as 88° against 98° of good leaf lard, must not be used as such. It not only leaks out but also causes weak side-walls, cupping and touchy tender dough. Addition of up to 10% hydrogenated flakes, softening point 140-145°, raises the softening point to 115° and corrects the defect.

To measure bread softness and to follow staling, the Panimeter (Fig. 1), an instrument developed at the Institute for Cereal, Flour and Bread TNO in Wageningen, Holland,[3] proved useful in the American Machine and Foundry Co.'s baking laboratory. The principle of the instrument, which measures compressibility and elasticity of a bread sample, is that of a balance, which with the help of a weight moving outward and inward on one side of the balance beam, allows compression of a standard size disk of bread held between a stationary plate and the balance pan on the other side of the balance beam. It then releases this pressure, both compression and pressure release proceeding gradually at a preset, regulated and constant rate. Decrease and increase of thickness of the bread sample are automatically recorded in correlation to time (Fig. 2).

The addition of increasing amounts of flour in the liquid sponge results in greater bread softness (Fig. 3) and loaf volume (Fig. 4).

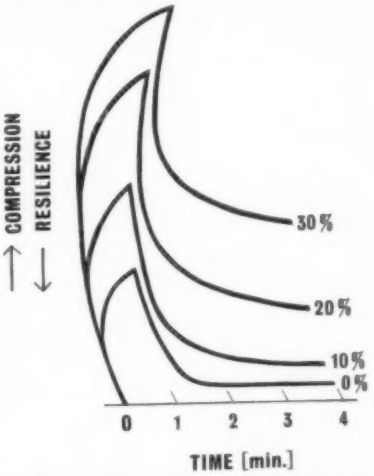
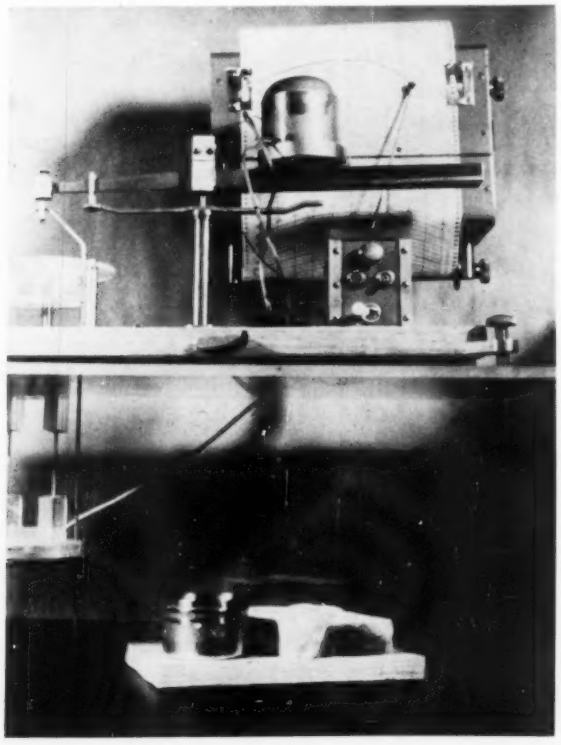


FIG. 3—Chart shows influence of the amount of flour used in the liquid sponge on compressibility and elasticity of bread.

The Panimeter is also most useful in evaluating the influence of varying amounts of mono- and diglycerides added to the shortening.

Chemical basis of the softening and anti-staling effect of mono- and di-

[3]Grateful acknowledgement is made to Dr. G. L. Bertram, director of the institute, who made this instrument available.



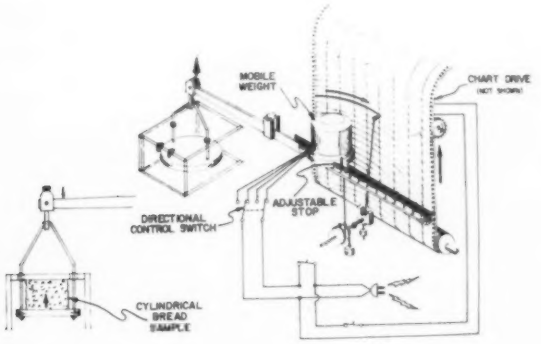


FIG. 1 (at the left)—This is the Panimeter, an instrument developed at the Institute for Cereal, Flour and Bread TNO, Wageningen, Holland, for measuring compressibility and elasticity of a bread sample.

FIG. 2 (above)—Construction drawing of the Panimeter shows its principal features.

glycerides has been explored by a number of investigators, most recently by Jongh (15). It appears due to adsorption of the glycerides on the starch surface. This weakens linkages between the swollen starch granules and makes the bread crumb less rigid.

For the milk used, a low content of serum protein is very important. Both spray and roller-dried, super heated milk can be used, but the Harland-Ashworth whey protein N should be below 1 mg./gm. 1.5 mg. is the upper-most limit. This applies also to cultured milk and sweet cream buttermilk. In whey preparations, serum protein values to 10 mg./gm. were observed. This resulted in strong volume depression, poor gas retention and very open grain.

Milk for Buffering

Milk is added in the liquid sponge make-up. If a low flour percentage is used, 2% milk is required for good buffering. Even with a high milk percentage, such as 6%, the pH remains between 4.6 and 5.0, even with a cultured milk of 5% acidity, used at 6% level (based on flour).

Buffer salt is usually added in the liquid sponge make-up. It is necessary when the formula calls for little milk, 1% or less. Even with milk percentages high enough to maintain a proper pH level, buffer salt may be desirable when soft water is being used. In this case the buffer salt supplies needed hardness rather than buffering effect.

To follow titratable acidity of the liquid sponge is a good way to control maturity. At the time of incorporation of the balance of the flour, that is about 2½ hr. from zero time, the titratable acidity should have increased by about 30%.

When 4-6% milk is added, tolerances become narrower, and one must operate carefully to avoid tender doughs and poor gas retention. With more than 6% milk solids, a volume depression becomes unavoidable. Addition of calcium acid phosphate at the rate of 0.35% is advisable when high milk percentages are used. The beneficial effect is due probably to protein toughening properties of the calcium ion rather than to acidity of the phosphate. Relatively high percentages of flour in the liquid sponge are helpful with high milk levels, and low liquid sponge temperature should be used starting at 80° instead of 84°. Dough temperature at the divider should, anyway, not be higher than 100°. At 105° there is cupping during proofing, and even collapse of the dough.

A somewhat firmer shortening is recommended with a high milk formula, which simply means getting near the center of the tolerance range.

A baker may be tempted to add vital gluten or millprotein to carry the additional load with which higher milk percentages burden the dough. Addition of millprotein can be the answer if there is a milk problem and one wants to accept the additional cost. The small particle size of this high-protein flour fraction increases accessibility of sulfhydryl groups and facilitates oxidation by bromate. Ten per cent of an airclassified flour fraction of about 20% protein may be used in this case. It is however, unnecessary if one develops near the center of tolerances and avoids approaching the margins. Vital gluten has created difficulties, as it tends to wash out and does not disperse properly in the liquid sponge. «

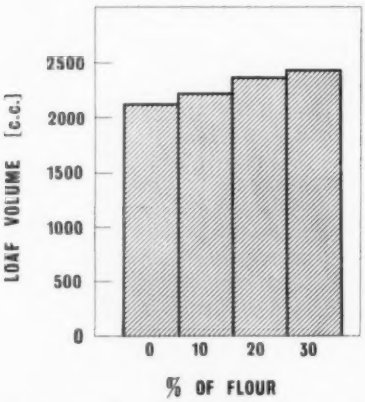


FIG. 4—Chart depicts influence of the amount of flour used in the liquid sponge on loaf volume.

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Management Conference At K-State Will Cover Agri-Business Trends

Trends in agri-business and problems of management will be given attention when Kansas State University holds its conference on grain and feed management at Manhattan Dec. 13-15.

Dr. Leonard W. Schruben, professor of economics at the university, will discuss agri-business. Management's problems will be covered by Robert W. Schoeff, leader of the extension formula feed project now in progress.

Management also will be given some personal views on a philosophy of operation when C. Clyde Jones, head of K-State's business administration department, addresses the banquet meeting the evening of Dec. 13.

Calling on out-of-state authorities for its Dec. 14 program, the conference will hear from George S. Abshier, extension marketing specialist, Oklahoma State University, and E. J. Laughlin, certified public accountant, currently on leave from K-State to the University of Illinois.

Management problems will be assigned to groups in attendance at the opening sessions and then discussed Dec. 15 under guidance of Mr. Schoeff and R. J. Baker, extension specialist in formula feeds.

Other speakers will include James A. McCain, president of the university, who will keynote the opening meeting, and Alvin E. Oliver, executive vice president, Grain and Feed Dealers National Assn., Washington. Mr. Oliver will speak on "The Washington Viewpoint." «

Ralston Purina Plans Program of Fellowships

Ralston Purina Co., St. Louis, has announced its program of research fellowship awards for 1962-63, providing for graduate work assistance to 10 outstanding students of agricultural colleges.

As in previous years, selection of the 10 winning students will be made by a committee of five. It will comprise a representative from each of the following: The Poultry Science Assn., American Society of Animal Production, American Veterinary Medical Assn., American Dairy Science Assn., and the American Association of Land Grant Colleges and State Universities. «

ENRICHMENT

THE GOOD GIFT FROM YESTERDAY

Reproduced above is the front cover of our illustrated brochure commemorating the 20th Anniversary of Enrichment. It traces the history and development of enrichment, how it is accomplished, and the benefits it contributes to mankind. These and other facts are interestingly told in this authoritative brochure. Please write for your free copy to Dept. of Nutritional Education, Hoffmann-La Roche Inc., Nutley 10, N. J.

Chicago Board of Trade Honors 50-Year Veterans at Dinner

By F. C. BISSON
Chicago Correspondent

Thirteen veteran members of the Chicago Board of Trade—none with less than 50 years on the world's largest commodity market — were honored recently by the exchange at a testimonial dinner.

Nearly 900 persons, including board members and their wives from 37 states, attended the affair at Chicago's Palmer House, reportedly the largest get-together of its type since the exchange's centennial dinner in April, 1948.

Honored for a cumulative total of more than 700 years on the board of trade, although all of them couldn't make it to the dinner, were, in order of length of membership: Lewis M. DeCosta, Edwin G. Stevenson, George F. Diehl, Edward H. Bagley, Soloman A. Smith, Caleb H. Canby, Frederick B. Earle, John F. Hermes, Joseph O. Schreiner, John G. McCarthy, Philip J. Reddy, Benjamin F. Black and Kenneth S. Templeton.

As for more statistics:

Their combined ages exceed 1,000 years—but eight of the 13 veterans are 100% active every business day, either on the trading floor or in their own offices.

In recognition of their tenure, Robert C. Liebenow, president, presided as master of ceremonies, with James P. Reichmann, chairman of the board, introducing them to those in attendance.

Speaker for the occasion was George McGovern, special assistant to President Kennedy and director of the Food for Peace Program.

Stressing the fact that "there can be no lasting peace in a world of hunger, sickness and insecurity," Mr. McGovern outlined the humanitarian objectives of his organization and pointed out what it does. Among other work, he explained, the program has expanded international trade; it has encouraged economic development, assisted in the purchase of necessary strategic materials, promoted collective strength, and fostered U.S. foreign policy.

Getting around to a subject of interest to millers, Mr. McGovern said that research experts believe they have established the basis for a major "breakthrough" in raising the protein level of the government's vast stockpile of wheat.

"By adding five pounds of soybean flour, and a small amount of lysine acid to each 100 lb. of wheat flour, protein usefulness of wheat flour can be tripled," claimed Mr. McGovern.

He went on to say, "This formula would add only 10% to the cost of ordinary flour, and it can be processed by our millers with existing facilities." These additional costs, added Mr. McGovern, might possibly be covered by in-kind payments from U.S. surplus wheat stocks.

The speaker also took time to express his personal opinion of reports that the U.S. may be giving consideration to selling some of its surplus wheat to Red China.

"No one in the State Department has any knowledge of this; no one in the White House knows about it and neither does the office of the consulate general in Hong Kong," said Mr. McGovern. «

Board of Trade Testimonial Dinner

Mr. Liebenow Mr. McGovern Mr. Reichmann

Graduate School Fellowship Awarded By Continental Grain

A 1961 engineering graduate of the University of Illinois, Gerald Wolin, Chicago, is the initial recipient of a fellowship established by the Continental Grain Foundation at Harvard University's Graduate School of Business.

The award, made for the academic year 1961-62, carries a maximum stipend of $1,500, and is granted to a candidate for the degree of master of business administration entering the school this fall. In the past, scholarships made by Continental Grain Co. were through the Fribourg Foundation.

Mr. Wolin, while in college, won a number of honors, including the Western Golf Association's Evans Scholarship. He was active in the Illinois chapter of the Evans Scholars, serving as pledge trainer and secretary. He was vice president of the engineering council and of the Illinois Student Chapter of Professional Engineers. «

Statistical Methods Outlined for AACC Section in New York

T. L. Koehler, manager of quality control, organic chemicals division of American Cyanamid Co., addressed the November meeting of the New York Section, American Association of Cereal Chemists, on the value of statistical methods.

His presentation stressed industrial usage of statistical methods for optimization of yield in chemical reactions. Mr. Koehler pointed out, however, that the principles outlined may have considerable utility in planning and carrying out studies in the areas of biochemistry and cereal chemistry.

He explained two techniques of special interest to the section: (1) Evolutionary operation, and (2) the technique of using the "path of steepest ascent." The latter, he said, gives an approach to research planning which has, in the past, shortened the number of experiments necessary to obtaining a desired answer. «

YEARS AGO

From the Files

Of THE MILLER

By Sarah Yocom

NOSTALGIA is defined technically as "a severe melancholia caused by protracted absence from home, or any wistful, excessively sentimental, sometimes morbid, yearning for return to or of some past period or irrecoverable condition." All of which, thanks to Mr. Webster, ruined my lead sentence this issue because I wanted to refer to December as a "nostalgic month" and then sneak into my subject matter from there.

But it dawned on me that I would be intimating indirectly that most of us were either melancholy or excessively sentimental, not to mention "sometimes morbid." And that settled that. However, December DOES bring about thoughts of good times past, so you see, all was not lost, I made it even without "nostalgia."

Remember the column we did on "non-milling" items from 1876? (See THE MILLER, Aug. 7, 1961, page 38.) Most of those were of a general nature but reflected current events of that day and what is now a part of our colorful history. Well, I've found a few more. I hedged a little this time and used two issues—Dec. 8 and Dec. 15, 1876:

●

A Boston man named Graham has invented a telegraphing apparatus, by means of which people have actually **talked** with each other at a distance of 200 miles.

●

The number of soldiers in the regular army is now 25,331.

●

The vote for President in Illinois was as follows: Hayes, 276,876; Tilden, 258,560; Cooper, 17,057.

●

Jesse James, the noted outlaw, has been seen near Leavenworth. They are after him.

●

A lady and gentleman created a sensation in Quincy, Ill., the other day by riding through the streets mounted on one horse; he before, and she behind. They were from Hannibal and on their wedding tour.

●

Jack McCall has been convicted at Yankton for the murder of Wild Bill in the Black Hills last summer.

●

Jack Morrissey has declared all presidential bets off at his pool room.

●

Double-decked street cars have been introduced on one of the lines in New York City.

●

The Spaniards have asked England for Gibraltar and are told that they can have it when the infernal regions freeze over.

●

The attempt to light the streets in the outskirts of St. Paul with kerosene is a failure.

●

There are 200 runs of buhrs operating in Minneapolis, and the city now manufactures more flour than any other in the U.S.

Odds 'n' Ends—

50 YEARS AGO . . .
Dec. 13, 1911

THE Northwestern MILLER has been preaching for years the necessity of establishing a standard system of ascertaining cost in the milling trade. It is with the utmost satisfaction, therefore, that we learn the Millers National Federation proposes to establish a standard system of cost, and to this end is now preparing figures and comparing individual methods.

●

In Germany there is a large business done in a product known as "potato flakes," which consist of slices of potato dried in a similar manner to apples and other fruits. They are said to be an excellent dairy feed. Prior to feeding cattle, the potatoes are soaked in water and absorb back a large percent of the moisture previously evaporated.

●

The W. J. Jennison Co., Minneapolis, recently installed a sprinkling system and a 500 h.p. 14 x 28 x 42 engine in its mill at Appleton, Minn.

●

A general meeting of the Dominion Millers Assn. was held at Guelph on Dec. 12. A pleasing feature was presentation of an address and purse of $1,000 to Secretary Watts in commemoration of the completion of his 20th year in office.

25 YEARS AGO . . .
Dec. 16, 1936

The other day we ran across a picture-story in Vitality News, the General Mills house organ, which we never expect to see in Bernarr Macfadden's bran columns. It was about 42-year-old Maurice A. Ryan, Columbus, Ohio, who has never tasted meat, fish, cheese, eggs or vegetables. He lives entirely on bread and milk, weighs 175 lb. and is in the pink of condition.

●

Continued drouth in the major wheat producing regions of China, except the lower Yangtze Valley, points to a reduction in the 1937 Chinese wheat crop.

●

Work has begun on foundations of the flour mill of the Cooperative Wholesale Society at the Royal Victoria Docks, London. When the new mill is completed the four largest mills in London, supplying about 60% of its flour requirements, will be located practically side by side.

10 YEARS AGO . . .
Dec. 11, 1951

A millfeed price ceiling order looks like a certainty as a holiday package for flour milling and feed industries. Action on the order is getting close to top priority at the feed section of the Office of Price Stabilization.

●

Leo Frank of Cliff H. Morris & Co. was elected president of the New York Association of Flour Distributors at the annual meeting of the association. Other officers elected are: John H. Blake, vice president; George W. Potts, THE Northwestern MILLER, secretary, and Fred W. Colquhoun, Bakers Weekly, treasurer.

●

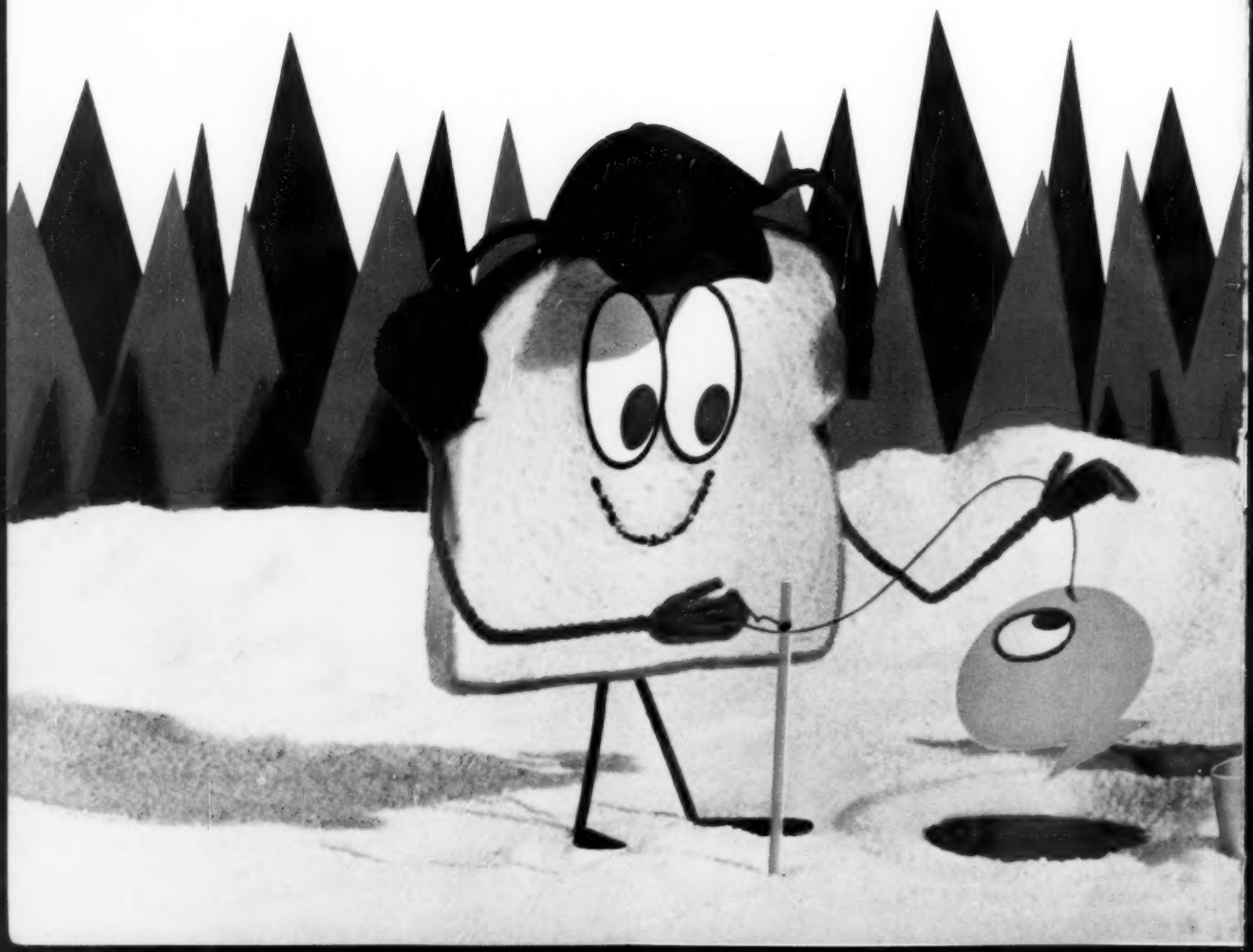
William A. Lohman, Jr., sales manager for General Mills, Inc., at New York, was in Buffalo for several days recently attending a conference.

●

John J. Vanier, president, Western Star Mill Co., Salina, Kansas, was in Kansas City Nov. 28 to meet with the advisory committee of the new feed technology school being established at Kansas State College. Mr. Vanier is chairman of the group. «

WHERE TOP PERFORMANCE COUNTS

YOU CAN COUNT ON
COMMANDER LARABEE



Fishing for new ways to bring you faster, "on-demand" delivery is a full time job at Commander Larabee. Yes—with thousands of shipments of all kinds and sizes, Commander is constantly angling for more efficient routes and shipping methods to serve you better. You'd be amazed at the lines they'll untangle to bring flour to your bulk bins on time. So, next time you're casting around for the kind of flour you want, exactly when you need it—why not drop a line to your Commander Larabee salesman (a phone call's OK, too)—and watch him run with the bait.

Archer-
Daniels-
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COMMANDER LARABEE
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MINNEAPOLIS • KANSAS CITY

A Milling Technology Feature

Moth Pests of Cereal Products and Their Control

By DR. RICHARD T. COTTON

Say "moth" and the layman immediately thinks of damage to his woolen articles, or of showy creatures pinioned under glass—but grain men and millers see a different picture. They recall machinery choked with webbing, grain matted by silken threads and damage which can be done to packaged cereals containing various stages of the moth's life cycle. Dr. Cotton gives studied comments on these pests, along with information on how to identify and destroy them.

WHEN MOTH LARVAE invade dried vegetable material and begin to feed, there's high concern from the farmer and grain man right on through the miller, warehouse personnel and the consuming public, and with good reason. Almost any species of moth is a potential pest, but fortunately, many are found only in small numbers in commercial establishments, and therefore are not of great importance.

Dr. R. T. Cotton

A few, however, can develop tremendous populations when conditions are right, and it is during these peak periods of abundance that great damage may occur. Therefore, we'll deal here with the comparatively small, but potentially damaging, species in this category.

Larvae or caterpillars of these moths attack both grain and milled cereal products, as well as dried fruits, nut meats, tobacco, spices and an almost endless variety of dried vegetable and animal products. Before the advent of food storage facilities, they apparently bred in accumulations of dry litter from plants and animals.

Woodroffe (1961) discussing the natural sources of "domestic" insects and storage pests states, "The natural food will obviously be some kind of waste material derived from plants or animals, possibly due to activity of other organisms. Because one of the most important characteristics of these species is the ability to live on dried materials, they are best described as dry-litter scavengers.

"In temperate regions of the world, dry waste materials of plants or animals are scarce in truly natural situations. Probably the most important sources of such materials are nests of birds, mammals and social insects, roosts of bats, and cavities which form beneath the loose bark of trees, if the situation affords protection from rain or drainage water. Without this protection, the rich accumulations of dry grass, seeds, feathers, dead insects and excrement decompose rapidly and support a humus fauna. But when protected from excess moisture the materials remain dry, do not decompose rapidly, and support a community of dry-litter scavengers which, although rare in nature, are now known to us as domestic insects and storage pests."

Today, although such natural sources of food for storage pests exist and may support a certain percentage of insect populations, there is usually also an abundance of dry litter around farm buildings, granaries and storages in which populations of both pests may be maintained, and from which outbreaks originate when conditions are favorable.

Pests of Stored Grain

Moths which attack stored grain and seed are not among the most abundant species of storage insect pests. However, they occasionally appear in tremendous numbers, thereby causing consternation because of their overwhelming abundance.

Their activities normally are confined to the surface grain, where the caterpillars spin silken threads which mat the kernels, forming a silken web over tops of the bins.

The Angoumois grain moth **(Sitotroga cerealella** (Oliv.)) is an exception. It spends its immature life, for the most part, within the kernels. This moth obtained its common name as a result of depredations in wheat in the province of Angoumois, France, where it is known to have been injurious since the year 1736. The moth is believed to have been introduced into the U.S. by early settlers. Before advent of the combine harvester it was a serious pest of wheat grown on the Atlantic seaboard. It attacks all types of grain and is still a serious pest of corn and rice in the South. At times it is also troublesome in corn stored in the southern portion of the commercial grain growing states.

Much early history of this moth in France, and the story of efforts to control destructive outbreaks there, appeared 200 years ago in a 314-page publication by H. L. Duhamel du Monceau and M. Tillet, his assistant. Simmons and Ellington (1932 and 1933) summarized early literature relating to depredations of this moth in the U.S. and recorded results of their research work on biology and control of the pest.

Early, Serious Outbreaks

During the early years, when outbreaks were common, the moth was so abundant one farmer in the Carolinas reported that the moths sometimes extinguished the light when he entered his granary after dark. Seriousness of these outbreaks around 1880 can be imagined by opinion expressed in the New York Sun that, if the government would exterminate

the moth for $5 million, it would be the best investment ever made by the people.

Larvae of the Angoumois grain moth which survives the winter in sheltered situations around farm buildings, in straw stacks or accumulations of waste grain, pupate in late spring and transform to moths which fly to the fields as grain is beginning to form. The moths then lay their eggs on developing kernels. The young grubs or caterpillars which hatch from the eggs burrow into the kernels of grain and complete their development hidden from view.

Before transforming to the pupal and moth stages, the caterpillar makes an escape tunnel to the outside of the seed in which it has spent its life, leaving only a thin layer of the seed coat intact for the moth to push through as it leaves the grain.

At harvest time the percentage of infested kernels in a field is extremely small. Unless the moth can go through several generations before the grain is threshed or shelled, damage is negligible. In earlier times when small grains were left in straw for considerable periods, to await threshing, the damage from this moth in some years was tremendous. Now that wheat and other small grains are harvested with a combine, damage from the Angoumois grain moth is comparatively light, since the soft-bodied moths are unable to make their way below the surface of binned grain to lay eggs.

Low temperature is the most important factor limiting survival of the Angoumois grain moth. Early history of this moth on the Atlantic seaboard before wheat was combined indicates that the moth never was abundant in years following severe winters. In the North Central states Cotton et al (1960) observed that only after a succession of mild winters does this insect become a serious problem in stored corn. It is usually found in small numbers infesting corn fields in the southern portions of Indiana, Illinois, Missouri and Kansas. But it is unable to spread very far north during periods when winters are normally severe. However, during several years preceding the winter of 1950-51, this insect spread to the northern boundaries of Kansas, Missouri and Illinois.

It is customary to store corn in the ear in open slat cribs during the season following harvest, hence the moth is able to reach and infest corn in all parts of the crib. An unusually heavy outbreak occurred in Kansas, Missouri, Illinois and Indiana in 1949. Moths surviving the winter of 1948-49 infested corn in the ear so badly that by the time it was shelled 30 to 40% of the kernels were infested in many locations. The winter of 1950-51 in this region was so cold the moth failed to survive in sufficient numbers to be important in 1951.

In the Southern states, winter temperatures are seldom severe enough to seriously affect populations of the Angoumois grain moth. According to Floyd et al (1959) field infestations of ears of corn by this moth in Louisiana at harvest time in 1957 was 9%. After storage in cribs until July, 1958, ear infestation had increased to 51%. These figures were based on average infestation in samples taken from seven geographical areas in the state.

Grain Moth Control

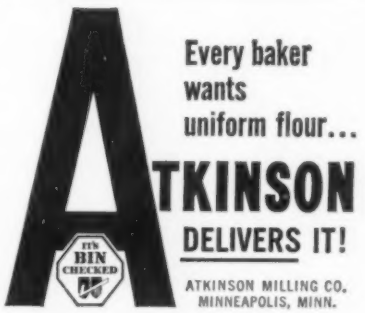
Control of the Angoumois grain moth will vary with the geographical region and type of grain. When wheat and other small grains are harvested promptly with a combine, and the grain binned, there is no problem. The situation is different with corn. In the commercial corn-growing area, during years when the moth is troublesome, corn should be shelled and binned as early as possible in the spring following harvest, and then fumigated. In the south it is advisable to shell, dry and fumigate corn as soon as possible after it is harvested.

The Indian-meal moth, **Plodia interpunctella** (Hbn.) is undoubtedly the most destructive moth pest of stored grain classed as general feeders. It is easily the most widespread and persistent insect pest of stored food products in the U.S. It is common as a surface pest of stored grain in flat storages, elevator bins, farm bins, warehouses filled with bagged grain or seed, and in similar situations. According to Phillips (1959) it has been the most troublesome insect pest of grain stored in boats of the reserve fleet on the East Coast.

The moth is a strong flier. In the spring it migrates from its many breeding places in and around farm buildings, homes, warehouses, mills and elevators to start infestations in grain storages. A study of the field infestation of wheat in North Carolina by Campbell (1959) revealed that, although the Indian-meal moth was not collected in samples of unthreshed wheat, it comprised 38% of the moth population reared from threshed wheat samples collected during combining. Although present in wheat heads, the larvae were apparently unable to reach the soft germ upon which they feed. However, they are brought into storage free or attached to the chaff or kernels.

This insect confines its activities largely to the surface grain, where the caterpillars spin silken threads which mat the kernels and form a silken web over the tops of bins or the surface of piles of grain in warehouse storage. In the case of bagged grain or seed, larvae often spin silken cocoons on the outside of bags, in order to pupate.

A number of other moths with similar habits are occasionally troublesome in stored grain. They are the Mediterranean flour moth, **Anagasta kuhniella** Zell.; the Almond moth, **Ephestia cautella** (Wlkr.); the tobacco moth, **Ephestia elutella** (Hbn.); the rice moth, **Corcyra cephalonica** (Staint.); the pink corn worm, **Pyroderces rileyi** (Wals.); the meal snout moth, **Pyralis farinalis** L., and the European grain moth, **Nemapogon**



granella (L.). In Canada the moths **Hofmannophila pseudospretella** (Staint.), and **Endrosis sarcitrella** (L.) are reportedly common in grain elevators.

They seldom cause serious loss to stored grain in the U.S., probably because conditions favorable for rapid multiplication seldom occur. Also, parasites and diseases build up rapidly when outbreaks occur and reduce the populations to negligible proportions.

The almond moth, Mediterranean flour moth and the tobacco moth closely resemble each other, and are probably confused by many observers who do not take the trouble to have them correctly identified. However, the almond moth is definitely known to be a common pest of stored seed and of farm-stored grain in the South. In the fall of 1949 a heavy surface infestation of this moth was discovered in wheat stored in a ship's hold in the reserve fleet on the Hudson River. The tobacco moth has been reported by Richards and Waloff (1946) to be a serious pest of wheat in bulk storage in England.

In general, the moth pests of stored grain prefer the germ to the endosperm as food. Some idea of the damage caused by a heavy infestation can be gained from the research of Richards and Waloff. They found that one larva of the tobacco moth consumed on an average 47.7 embryos of wheat during its development.

Prevention, Control

The prevention and control of damage from surface invasions of grain-infesting moths apply equally well for all species. Most damage is restricted to the top 3 or 4 feet of grain. Elevator bins with surface infestations should not be turned, since this would result in dispersal of infestations throughout the top third of the bin, with consequent exposure of additional grain to attack. It is much better to kill the surface infestation and remove the webbing and damaged material before the bin is drawn.

Contact insecticides and aerosols are both effective against surface infestations of moths in elevator bins. Extract of pyrethrum (total pyrethrins not less than 0.8%), in a high grade oil carrier, is a very satisfactory contact spray when applied by an electric sprayer. It should be put on at the rate of approximately 6 oz. per 1,000 cu. ft. of space above the grain in closed top bins. The dosage should be increased to 8 oz. in open top bins.

As a surface treatment or preventive to protect grain in storage against the invasion of moths, apply (1) Premium grade malathion 57% emulsifiable concentrate to the surface of clean, uninfested grain at the rate of one half pint in 1 to 2 gallons of water per 1,000 sq. ft. of surface grain, or (2) malathion 1% premium grade wheat flour dust at the rate of 30 lb. per 1,000 sq. ft. or (3) pyrethrins 0.3% by weight, synergist 3.0% by weight and deodorized kerosene 96.7% applied at the rate of one pint per 100 sq. ft.

In the case of shelled corn in long-time storage, excellent protection from moth attack can be obtained by spraying the surface with oil at the rate of two quarts per 100 sq. ft. of surface. The oil should be technical white or other refined oil of 100 to 200 seconds viscosity (Saybolt, 100° F.) and free from objectionable odor.

The most important moth pest of flour mills is the Mediterranean flour moth. It was first discovered in flour mills in Germany in 1870 and took about 30 years to spread over the world. It was first discovered in the U.S. in 1892. Since that time it has become widespread over the country, and for many years was considered the most troublesome insect pest of flour mills. The larvae spin silken threads wherever they go, webbing and matting particles of food in which they are feeding. In flour mills, the machinery becomes so clogged with the matted flour that milling operations have to be halted until units can be cleaned.

The moth has a wing spread of slightly less than one inch. Its hind wings are a dirty white, but its forewings, which alone show when the moth is at rest, are a pale gray with transverse wavy black markings. The larva or caterpillar, which causes all the damage, is about one half inch long when full grown. It is whitish or pinkish, with a few small black spots on the body.

In mills which have periodic fumigations with local fumigants, or general fumigations with HCN or methyl bromide, the Mediterranean flour moth is no longer a problem.

The Indian-meal moth is often seen in flour mills, but is seldom a pest of milling machinery. It prefers the coarser grades of flour and milled cereals, and is the moth most com-

U.S. Department of Agriculture Photo

FIG. 1—Adult of the Indian-meal moth. This pest frequently causes surface infestations of bulk and bin-stored grain. It is considered the worst insect pest of packaged cereal foods.

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Domestic and Export Millers

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Fisher's

U.S. Department of Agriculture Photo

FIG. 2—Adults and larvae of the Mediterranean flour moth, shown in flour. This pest was at one time the worst insect pest in flour mills, and still is troublesome at times.

monly found in packages of whole wheat flour, graham flour, and corn meal. Infestations in the flour mill are occasionally found in the middlings purifier.

A rather handsome moth, it can be recognized by the markings on its forewings. These are reddish brown with a coppery luster on the outer two-thirds, but whitish gray on the inner or body end, so that when the moth is at rest it appears to be marked with a prominent brown band. Its larvae feed on such a wide range of foodstuffs that it is probably the most troublesome insect pest in warehouses, bakeries, homes, and in plants storing or processing dried fruit, nut meats and similar products used by the baking industry.

According to Hamlin et al. (1931), it has been reported to feed upon grain and grain products, garden seeds, graham crackers, dried fruits, preserved fruits, nuts, edible acorns, dried vegetables, dandelion roots, garlic heads, dried botanical specimens, dried insects, bee bread, yeast cakes, powdered milk, spices, cinnamon bark, cacao beans, sweetened chocolate, chocolate marshmallows and other candies.

In homes it is often confused with the clothes moth. Individual moths flying about the home in many cases have emerged from packages of dry foods stored in the home, and are mistaken for clothes moths. In common with many moths which are general feeders, the Indian-meal moth is fairly resistant to low temperatures and can breed in dry food products which are nearly devoid of moisture.

The almond moth, the tobacco moth and the rice moth are common pests of warehoused products, particularly in the South. The tobacco moth is such a common warehouse pest in England that it is known in that country as the warehouse moth.

In selection of control measures against warehouse pests, Parkin et al. (1960) pointed out the advantage of having a wide knowledge of insect biology, and particularly of insect habits, to take advantage of any vulnerable phase in the life cycle. Sometimes no such phase is apparent. But a careful biological study has, in general, proved essential in successful practical control, e.g., control of the tobacco moth in U.K. warehouses is now based on the timing of sprays to combat flying moths or the migrating caterpillars.

On the other hand, a study of the almond moth in tropical stowages has shown that caterpillars of this species do not migrate in so vigorous or exposed a manner, and that reliance must be placed on the control of the adults, especially by fogging during the main flight period at dusk. In Ghana the almond moth in warehouses is controlled by fogging with pyrethrum spray every evening during flight season of the moths. It might be added that most moth pests of stored products prefer to hide in darkened locations during the day, but are in active flight at dusk.

(The control of warehouse infestation was discussed in detail in an article in the Oct. 30, 1961, issue of THE Northwestern MILLER, page 34.) In general, strict sanitation, modern management practices, intelligent use of synergized pyrethrum sprays, malathion sprays, residual sprays and occasional fumigations of entire warehouses or tarpaulin covered stacks of commodities with HCN, methyl bromide, or mixtures of ethylene dibromide with methyl bromide can be counted on to remedy any infestation problem. «

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WHERE THEY ARE MEETING

December

Dec. 15—Northwest Section, American Association of Cereal Chemists, annual dinner meeting; Hotel Dyckman, Minneapolis; chairman, Sheldon Greenberg, the Pillsbury Co.

Dec. 15-16—District 1, Association of Operative Millers; Wichita, Kansas; sec., Richard Magergurth, Air Age Equipment Inc., Topeka.

1962

January

Jan. 9—Michigan Bakers Assn., 10th annual Bakers Educational Conference; Kellogg Center, Michigan State University, East Lansing, Mich.; sec., Fred Hill, Hill's Bakery, Cedar Springs, Mich.

Jan. 12-14—Rocky Mountain Bakers Assn., mid-year meeting; Glenwood, Colo.; sec., Fred Linsenmaier, P.O. Box 871, Denver.

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Jan. 16-18—Hard Red Winter Wheat Workers, annual conference; Kellogg Center, Lincoln, Neb.; chairman, A. M. Schlehuber, Oklahoma State University, Dept. of Agronomy, Stillwater, Okla.

Jan. 18-19—National Soft Wheat Millers Assn., annual winter meeting, Brown Hotel, Louisville, Ky.

Jan. 19-20—District 10, Association of Operative Millers; Fresno Hacienda, Fresno, Cal.; sec., Gene Thomas, California Mill Equipment, Inc., Burlingame, Cal.

Jan. 27—District 4, Association of Operative Millers; Minneapolis; sec., W. R. Carter, R. J. Carter Co., 1219 Flour Exchange Bldg., Minneapolis 15.

Jan. 28-30—Potomac States Bakers Assn., annual convention; Lord Baltimore Hotel, Baltimore, Md.; pres., Charles J. Schupp, 126 Mathieson Bldg., Baltimore 2.

Jan. 31—Potomac States Bakers Assn., post convention executive committee meeting; Lord Baltimore Hotel, Baltimore, Md.

February

Feb. 11-13—Pennsylvania Bakers Assn., annual convention; Bellevue Stratford Hotel, Philadelphia, Pa.; sec., Theo. Staab, 600 N. Third St., Harrisburg, Pa.

Feb. 17—District 14, Association of Operative Millers; Denver, Colo.; sec., John Streit, Wallace & Tiernan, Inc., Denver.

March

March 2-3—District 11, Association of Operative Millers; Roanoke Hotel, Roanoke, Va.; sec., Marvin D. Brown, Spartan Grain & Mill Co., Spartanburg, S.C.

March 5-8—American Society of Bakery Engineers, 38th annual meeting; Edgewater Beach Hotel, Chicago; sec., Bernard Bergholz, Jr., Room 1354, La Salle Wacker Bldg., 121 W. Wacker Dr., Chicago 1, Ill.

March 9-10—District 7, Association of Operative Millers; Hilton Hotel, Fort Worth, Texas; sec., Henry H. Stark, Ross Machine & Mill Supply Co., Oklahoma City, Okla.

March 17—District 5, Association of Operative Millers, spring meeting; Effingham, Ill.; sec., R. H. Artz, 720 So. Amos, Springfield, Ill.

March 19-20—Grain and Feed Dealers National Assn., pre-convention secretaries' circle meetings; Denver-Hilton Hotel, Denver, Colo.; sec., Herbert L. Sharp, 401 Folger Bldg., 725 15th Street, Washington, D.C.

March 19-26—Associated Retail Bakers of America, National Retail Bakers Week; chm., Walter R. Schuchardt, ARBA, 731-35 W. Sheridan Rd., Chicago 13, Ill.

March 21-23—Grain and Feed Dealers National Assn., annual convention; Denver-Hilton Hotel, Denver, Colo.; sec., Herbert L. Sharp, 401 Folger Bldg., 725 15th Street, Washington, D.C.

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April

April 9-11—Pacific Bakers Northwest Conference, annual meeting; Multnomah Hotel, Portland, Ore.; sec., Roger Williams, P.O. Box 486, Salem, Ore.

April 9-11—Texas Bakers Assn., annual convention; Hotel Texas, Ft. Worth; sec., Guy Lichyter, 1121 National Building, Dallas 1, Texas.

April 26-28—Southern Bakers Assn., annual convention; Boca Raton Hotel, Boca Raton, Fla.; sec., Benson L. Skelton, Henry Grady Bldg., 26 Cain St., N.W., Atlanta 3, Ga.

April 29-May 2—Millers National Federation, annual convention; Hotel Olympic, Seattle, Wash.; sec., John J. Sherlock, 309 W. Jackson Blvd., Chicago 6.

April 29-May 2—Associated Retail Bakers of America, annual convention and exhibition; Bellevue-Stratford Hotel, Philadelphia, Pa.; sec., Miss Trudy Schurr, 731-735 W. Sheridan Rd., Chicago 13, Ill.

May

May 4-5—Illinois Grain Dealers' Assn., 69th annual convention; St. Nicholas Hotel, Springfield, Ill.; sec., Donald E. Palmer, 910 Lehmann Bldg., Peoria, Ill.

May 6-8—National Council of the Baking Industry, annual conference; Queen Elizabeth Hotel, Montreal, P.Q., Canada; dir., R. H. Ackert, 4 N. Sherbourne St., Suite 105, Toronto 5, Ont., Canada.

May 14-17—Association of Operative Millers, annual technical conference and trade show; Denver-Hilton Hotel, Denver, Colo.; exec. vice president, Donald S. Eber, 639 Board of Trade Bldg., Kansas City 5, Mo.

May 18-21—National Association of Flour Distributors, 43rd annual convention; Statler Hilton Hotel, Detroit, Mich.; sec., Philip W. Orth, Jr., 304 E. Florida St., Milwaukee 4, Wis.

May 20-24—American Association of Cereal Chemists, annual meeting; Chase Hotel, St. Louis, Mo.; exec. sec., Raymond J. Tarleton, 1955 University Ave., St. Paul 4, Minn.

June

June 3-5—Arkansas-Oklahoma Bakers Assn., annual convention; Arlington Hotel, Hot Springs, Ark.; sec., Opal M. Lucas, P. O. Box 2297, Little Rock, Ark.

June 15-18—Rocky Mountain Bakers Assn., annual convention; Continental Denver Hotel, Denver, Colo.; sec., Fred Linsenmaier, P.O. Box 871, Denver.

July

July 11-14—National Bakery Suppliers Assn., annual convention; Bayshore Inn, Vancouver, B.C., Canada; chm., John Rose, Kirkland & Rose, Ltd., Vancouver, B.C.

October

Oct. 13-17—American Bakers Assn., annual meeting and convention; Hotel Sherman, Chicago; sec., Harold Fiedler, 20 N. Wacker Dr., Chicago, Ill.

CALENDAR FOR 1961-62

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1963

April

April 28-May 2—American Association of Cereal Chemists, annual meeting; Leamington Hotel, Minneapolis; exec. sec., Raymond J. Tarleton, 1955 University Ave., St. Paul 4, Minn.

May

May 17-18—Illinois Grain Dealers Assn., 70th annual convention; Pere Marquette Hotel, Peoria, Ill.; sec., Donald E. Palmer, 910 Lehmann Bldg., Peoria, Ill.

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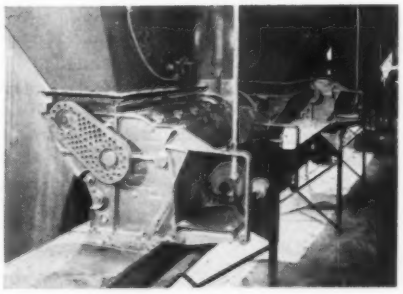

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Milling and Baking in Japan

By DR. H. H. SCHOPMEYER

THE VISITOR TO JAPAN soon learns that its people grow and process a considerable quantity of wheat—and that the Japanese milling and baking industries are well established—despite the country's traditional reliance on rice as a chief cereal food.

As for wheat production, statistics of the Japanese government clearly show what has been occurring the past few years:

TABLE 1

Crop Year	Metric Tons	Bushels
1955	1,467.7	54,000,000
1956	1,375.2	51,000,000
1957	1,330.0	49,000,000
1958	1,280.9	47,500,000
1959	1,416.0	52,500,000
1960	1,531.0	56,900,000

In addition to domestic wheat, which is soft red ranging in protein content from about 9 to 10%, they have been importing large quantities from Canada, the U.S. and Australia. Recently, a little has been coming in from Russia (Table 2).

In order to process this wheat, an extensive milling industry has been set up. It has been estimated that there are about 700 flour mills in Japan. Many of them are very small, handling only a few bushels a day, and some still use stones for grinding. About 80 to 90% of the milling capacity in Japan is concentrated in four large concerns:

NAME—	Number of Mills
1. Nisshin Flour Mills, Ltd.	15
2. Nippon Flour Mills	10
3. Showa Sangyo Flour Mills	4
4. Nitto Flour Mills	4

Milling capacity of the entire country is rated at about 25,000 metric tons of input wheat per day, or approximately 410,000 cwt. of flour daily. Of the approximately 700 mills in Japan, some are 30 to 40 years old and equipped with American equipment, while some have European machinery. One particular old mill has Seck-Amme-Giesicke equipment from Germany.

Japan is, however, expanding its milling industry, and Buhler Bros., Uzwil, Switzerland, has been particularly active at installing new units. MIAG, Brunswick, West Germany, and Henry Simon, Ltd., Cheadle Heath, Eng-

Japan's milling and baking industries hum with activity these days — and here's a firsthand account of what is being accomplished. Dr. Schopmeyer is a member of long standing in the American Association of Cereal Chemists. He also holds memberships in the Association of Operative Millers and the American Chemical Society. Active in research involving both wet and dry milling, he holds numerous patents in these fields and has written a number of articles in conjunction with his work. Earlier this year he spent a month in Japan as the guest of Zen Nakayama, owner and publisher of the Shokuryo Times newspaper, which is distributed in Tokyo and Kobe. While in Japan Dr. Schopmeyer took part in a series of seminars on cereal chemistry and grain processing.

land, also are currently installing new mills in Japan. Some of the older mills have an extremely short system, but the new ones started up are somewhat longer, with roll lengths ranging between 0.6 and 0.8 in. per 100 lb. of flour, with ample purifying and sifting surfaces.

These new mills are pneumatic and fully modern in every respect, representing best efforts of the large modern-day milling engineering firms who are erecting them.

While much equipment of foreign manufacturers was observed in the mills, Japanese made units were evident in almost every one. Actually, milling equipment of Japanese manufacture patterned after American or European design can be seen in all milling operations except grinding, and reportedly, one manufacturer is now making roll stands after a European design.

Caught in a Squeeze

Japanese millers feel they are caught in a squeeze, they must make flour for a wide range of uses for products characteristic of both East and the West. These include American and European-style breads, cakes and cookies, Japanese and Chinese-type noodles, cakes, rolls, buns and cookies. They must rely largely on imported wheat of rather uncertain specification.

Imported wheat, as well as that grown locally, is all controlled by the government and allotted to mills on a proportionate basis for them to blend and mill as necessary to meet their customers' requirements:

TABLE 2
Imports of Wheat Into Japan

Country of Origin	Quality	Japanese Food Agency —Fiscal Year (April-March)— 1957	1958	1959	1960	Remarks
		—thousand metric tons—				
U.S.A.	Soft	884	895	614	722	
	Semi-Hard	175	113	73	177	Hard-Winter
	Hard	100	35	97	33	
	Grant	62	69	37	2	PL 480
	Sub-Total	1,221	1,112	821	934	
Canada	Hard	829	860	1,070	1,069	
Australia	Soft	151	110	203	54	
	Semi-Hard	...	12	50	10	
	Sub-Total	151	122	253	64	
U.S.S.R.	Semi-Hard	...	2	23	65	
Italy	Soft	...	1	...	...	
	TOTAL	2,201	2,097	2,167	2,132	

1. For bread flour for high quality bread production: Manitoba No. 2 or No. 3—100%; 2. For bread flour second quality: Manitoba No. 2 or No. 3—70-90%; U.S. Hard Winter—30-10%; 3. For low grade bread flour and Chinese noodles: Manitoba No. 5—40% extraction; the remainder is sold as feed; 4. For cakes and cookies: U.S. West Coast White Wheat; 5. For Japanese noodles, macaroni and spaghetti: Japanese soft red wheat; 6. For Chinese noodles: Manitoba — 30%; U.S. Hard Winter—70%.

Japanese millers customarily temper to 15.5% moisture in wheat to rolls by a variety of techniques, including European radiator or hot air methods, or by steam or cold water conditioning, and they mill flour to 14% moisture. They report 78-80% extraction on bread and cake flours,

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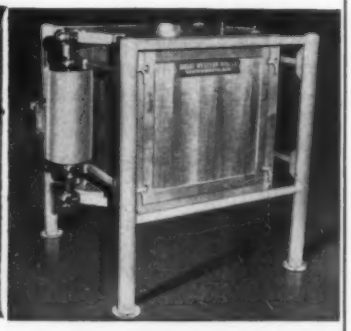
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and make several cuts or grades in each instance. One miller remarked that they have been milling about 60 different grades of flour products. (The figure 78-80% extraction is figured on the dirty elevator wheat) (Table 3).

For bread production, Manitoba wheat is preferred by the bakers, who demand a high protein, strong flour with very good tolerance, probably necessitated by the limited temperature control, and other factors maintained in the average bake shop. The Canadian spring wheat (Manitoba) averages 13.5% protein, while the U.S. hard winter averages 12.5% protein. U.S. and Australian hard winter wheats are frequently referred to as "semi-hard."

In the Japanese designation:

Hard wheat is above 13.5% protein content; semi-hard wheat is above 11.5-13.4% protein content and soft wheat below 11.5% protein content.

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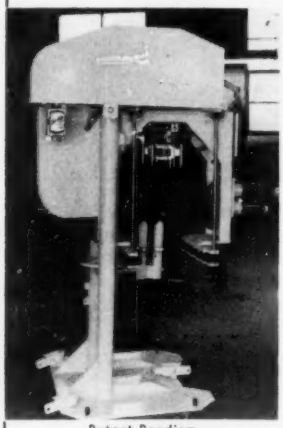

Patent Pending

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Some experiments were conducted by milling and baking U.S. hard winter wheats a year or so ago with satisfactory results. There is no doubt it could be used if properly selected and baking procedure is modified to handle the wheat to best advantage. Bread flour is treated with benzoyl peroxide for bleaching and chlorine dioxide (Chefaro electrolytic process) for maturing. Chlorine is sometimes used on cake flour. No treatment is applied to noodle, spaghetti and macaroni flours, and no malt or bromate is added at the mills.

Well-Equipped Laboratories

The mills have well-equipped laboratories for running moisture, ash and protein determinations. Most of them have facilities for pan bread baking, making generally 1½ lb. loaves by a sponge and dough procedure. The loaves are evaluated for volume, grain, texture and other factors. Some of the mills have small presses for making noodles.

Most labs are equipped with Brabender farinographs, amylographs and extensographs, and quite heavily staffed by U.S. standards.

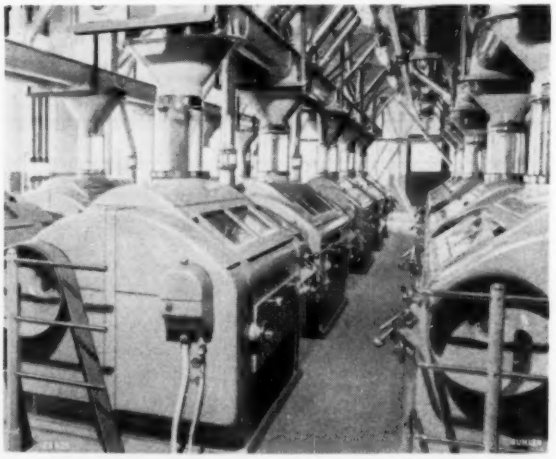
While considerable testing is being done during our visit, it all seemed to be on daily production samples to indicate trends. Very little, if any, seemed to be on process samples to more closely control mill operations or product quality.

Moisture of wheat to rolls is controlled at 15.5% moisture and flour is sold at 14% moisture. Wheat is generally washed prior to tempering by using a whizzer type washer.

The laboratory methods used for analysis are chiefly those as outlined in the American Association of Cereal Chemists methods book which each lab seems to have for reference.

Mills for the most part have rather limited bulk flour storage facilities, but most store considerable quantities of bagged flour. A representative of one milling concern stated that his firm expects to store 200,000 to 250,000 cwt. flour in 44-lb. bags at all times to insure proper aging and availability. No flour is being delivered in bulk to bakers, although some millers are considering it and have some knowledge of American developments along this line.

Insect and rodent infestation causes very little concern to millers, for Japanese food agencies do not attempt to



NISSHIN SEIFUN, Kobe, was visited by Dr. Schopmeyer. One point of interest was the roll floor, where these remote-controlled four-roller mills can be seen. The equipment was designed and installed by Buhler Bros., Uzwil, Switzerland.

set standards or tolerances for such materials. None of the mills or bakeries observed had any program at all for control of insects or rodent contamination either in the incoming wheat or the finished product. Since most domestic wheat comes to market in 120 lb. bags of woven rice straw and is stored in these in tiers 12 to 15 high, where there is no chance for insect or rodent control, it is obvious that both insect and rodent contamination can run high at times. Or, as one miller stated, "In the summer months we find lots of little holes in the wheat."

Criticism from Bakers

The millers all commented repeatedly about criticism from bakers on lack of tolerance and uniformity in bread flour, and seemed to feel considerable pressure to provide uniform material.

The baking industry in Japan is well developed and an extremely wide range of products is made, including pan and hearth breads, plain buns, filled buns or rolls, sweet rolls, cakes, cookies and a wide variety of cracker-like products flavored with various herbs. Many of these have a glazed surface such as pretzels. One small sidewalk retail store had 39 kinds of cakes, cookies and crackers.

The bread produced is mostly similar to American types, and the procedures follow American techniques. Principally, pan bread is produced, part as regular in open pan loaves and part as pullman type, generally 1½ lb. loaves. A very small amount of hearth bread is made, with loaves running about one half pound each.

Equipment used in the bakeries is, for the most part, of American manufacture or of Japanese manufacture after American design. Many baking units are quite large. One in particular was using 40,000 lb. of flour per day, turning out a very complete line of bread products, cookies, cakes, rolls, and other items. The bread produced is principally open pan and pullman types, with very little hearth bread and hard rolls. A very small amount of pan bread is colored with caramel to simulate whole wheat, but no whole wheat or graham or rye bread was seen.

A variety of specialty-filled rolls is made. The fillings include:

1. Sweetened bean paste; 2. Sweetened pea paste; 3. Sweetened pumpkin paste; 4. Sweetened fruit pastes; 5. Sweetened custard paste; and 6. Sweetened chocolate paste, as well as a curry-filled fried roll for East Indians living in Japan.

Most of the specialty rolls are made from regular pan bread dough. This particular bakery operates an extensive delivery system, and 60 trucks were observed in the parking lot. The bakery was making American type bread using a 70% sponge procedure, considered to be of good quality by American standards.

An interesting innovation was observed in a small retail shop which was producing bread, cakes, a wide range of sweet rolls and filled, yeast-raised products termed "cake bread." The yeast culture for the "cake bread," developed from agar, slants through some five transfers as:

1. Agar slant; 2. 50 cc media in 250 cc (Ehrlenmeyer); 3. 100 cc media in 500 cc (Ehrlenmeyer); 4. 250 cc media in 1,000 cc (Ehrlenmeyer), and 5. 2 liters of media (approximately) made up from about 2 lb. steamed rice grains molded with Aspergillas (oryzae or niger); 6. 2 liters of the foregoing media after 1 day's yeast growth were added to 2 bags—22 kg. each of flour for the straight dough.

The molded rice was bought on wood trays and grown

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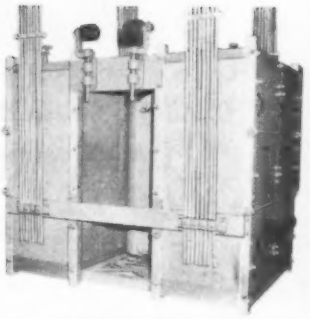
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5 to 7 days for heavy mold growth before use. Yeast was transferred from stage to stage using pure culture techniques which the operator said he "learned by experience."

Rolls made from this dough had a slight characteristic taste which the Japanese seem to prefer. This shop has no air conditioning and very little attempt is made to regulate dough temperatures.

Much Work by Hand

The bakers generally have rather large staffs, and much work is done by hand. However, bread is sliced and wrapped by automatic machinery. Absence of temperature control and rather vague scheduling may account for part of the bakers' troubles with lack of flour uniformity and tolerance.

Bread consumption increased in Japan for several years after World War II, but apparently it is now levelling off. Part of this is due to economics. Rice is basically a cheaper food than bread, and part, no doubt, is due to limited facilities for preparing flour products in the average Japanese home, which has only limited kitchen equipment and no facilities or "know how" for preparing baked products from flour. Use of electricity and gas is now very general. Even farm homes have electric lights and television, so that installation of mixing and baking facilities would not be difficult if demanded.

Western style restaurants and hotels serve bread and rolls regularly, but Japanese style inns and restaurants continue to serve rice, which is eaten in large quantities. A typical Japanese meal will consist of a large bowl of rice, which would make a very sizeable mound on one's

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TABLE 3

Wheat Mill Mixes and Some Typical Products Made from Them

Mix	Ash	Protein	% of Wheat	Moisture
Bread Mix: Manitoba No. 2 & No. 3 or U. S. Dark Hard Northern Spring				
Top-grade flour	0.30–0.33	11.0–11.5	20–25	14.0
Second-grade	0.50–0.52	12.0–12.5	40–45	14.0
Clears	0.70–0.80	14.0–15.0	8	14.0
Red Dog	.....	.....	2	14.0
Japanese Noodles Mix: Japanese Domestic 70-100% U.S. Western White 30-0%				
Top-grade flour	0.33–0.35	7.0– 8.0	35–38	14.0
Second-grade	0.48–0.50	8.0– 8.5	35–38	14.0
Third-grade	0.95	10.0	2	14.0
Chinese Noodle Mix: Dark hard winter (U.S.), 55% Manitoba, 30% Australian semi-hard, 15%				
Best-grade flour	0.33–0.35	10.5–11.0	40	14.0
Straight-grade	0.42–0.44	12.0–12.5	65	14.0
Cake Flour Mix: U.S. Western White				
Top-grade flour	0.32	6.5	15–20	14.0
Second-grade	0.48	7.5	50–55	14.0
Third-grade	0.80	8.5	5–7	14.0

TABLE 4

Consumption of Wheat Flour

April, 1959-March, 1960

Item	Quantity*	Total	Soft	Semi-Hard	Hard
		%	%	%	%
Bread	758.6	34	...	9.0	25.0
Noodles	959.4	43	34.5	5.4	3.1
Cakes	290.0	13	13.0	...	...
Industrial Use	89.2	4	...	0.8	3.2
Others	133.9	6	6.0	...	...
TOTAL	2,231.1	100	53.5	9.2	37.3
April, 1960-March, 1961					
Bread	726.0	33	...	8.8	24.2
Noodles	925.0	43	31.2	6.5	5.3
Cakes	290.0	14	14.0	...	...
Industrial Use	81.0	4	...	0.8	3.2
Others	130.0	6	6.0	...	...
TOTAL	2,158.0	100	51.2	9.7	39.1

*Metric tons.

plate, all covered by a curry, shrimp or other sauce for 100 yen (about 35¢).

While bread is the principal food product made from wheat, others are assuming substantial importance. Table 3 shows relative amounts of flour used for various purposes. Spaghetti and macaroni, made from domestic soft wheat, are being eaten in substantial amounts, and it is calculated that volume of these products will likely continue to increase, although it is felt by most that bread consumption will not increase greatly.

Japanese cakes made after Western standards are frequently 3 to 4 layers high—masterpieces of design and decoration. Many types of cookies and similar products, too, are beautifully decorated.

Family-style cake and other mixes are almost unheard of in the Japanese market, although some millers are investigating the possibility of their manufacture.

Table 4 shows the various uses in Japan for wheat products. Noodles represent the biggest single outlet, taking 43% of the flour consumed. Bread is second with 34% for the year ending March, 1960, and 33% for the year ending with March, 1961. Total usage for the 1961 period, 2,158,000 metric tons, amounts to about 47 lb. per person in Japan.

Regarding the Japanese economy, before World War II the rate of exchange between Japanese and American money was 2 yen per dollar. Now it is 360 yen. Prewar labor was paid 1 to 2 yen per day (10 hr.). Labor is now paid about 15 to 16,000 yen per month, average 28 ten hour days, or 60 yen per hour (16¢ U.S.). This would be the approximate equivalent of mill or general unskilled labor. Skilled labor—a carpenter or mechanic—would be paid about 30,000 yen per month, or 32¢ per hour U.S. A graduate direct from college might get about 12,500 yen per month ($35), and by diligent hard work he might get up to $100 per month. The chief engineer of one of the large milling groups gets $150 per month.

The president or principal official of a large business will get about 1 million to 1.5 million yen per year or $3,000 to $4,000.

Farm Income Good

Farm income is comparatively good. Farm sizes average about two acres, which is devoted to rice as a summer crop and wheat in the winter. Yields will run about 40 to 50 bu. of rice per acre and 30 to 40 bu. of wheat. The farmer will have an income, after all expenses, of $600 to $700 per year, which makes him comparatively prosperous.

NIPPON FLOUR MILLS was on Dr. Schopmeyer's itinerary. Following a tour of the firm's mill, he was duly photographed with research personnel and executives of the company.

The government has fixed the price of wheat to the mills approximately as follows:

Kind	Yen	Per Bushel U.S. Price Equivalent
Canadian No. 2-No. 3	3700 yen/100 kg.	$2.80
U.S. West Coast	3500 yen/100 kg.	2.65
Domestic Japanese	3500 yen/100 kg.	2.65
U.S. Hard Winter	3600 yen/100 kg.	2.72

Flour is sold at different prices depending on grade,

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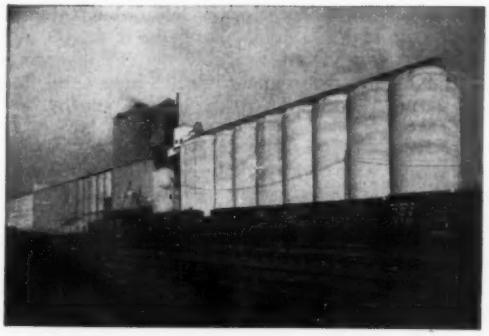

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and other factors, as shown by the following:

Kind	Yen	Price Per Cwt. U.S. Equivalent
Best quality bread flours	1350 yen/22 kg.	$8.50
Medium quality bread flours	1100 yen/22 kg.	7.10
Best quality noodle flour (Chinese)	1200 yen/22 kg.	7.50
Best quality cake flour (from U.S. Western)	1300 yen/22 kg.	8.15

Only one type of millfeed is made, and it sells for 600 to 700 yen/30 kg.

Japanese millers complain constantly that profits are extremely small, running about 1½ to 2% of gross sales. But almost all the principal mills are expanding facilities, an indication that the future looks encouraging.

Bakery products sell for the following prices:

Kind	Yen	U.S. Price Equivalent
Pan bread, approximately 1 lb. (412 grams)	45	13¢
Hamburger buns each	15	4.2¢
Hamburger buns filled with bean paste	15	4.2¢
Hamburger buns filled with custard	15	4.2¢
Yeast raised donuts	15	4.2¢
9 in. 2 layer cake heavily iced	700	$2.00
6 in. 2 layer cake heavily iced	450	$1.25
Cup cakes	20	5.5¢

Clears and other low grade flours are almost all sold for processing to starch and gluten, the latter used for making monosodium glutamate. Demand for this is so large that all low grade flours available are readily disposed of through this outlet.

HERE IS A RETAIL bakery in Kobe. At the left is Zen Nakayama, owner and publisher of the Shokuryo Times, which newspaper sponsored Dr. Schopmeyer's trip to Japan. Dr. Schopmeyer is at the center, with the bakery's proprietor at the right.

The future demand for wheat in Japan is not extremely encouraging, in our opinion. Present consumption is almost static. The Japanese are producing all their own requirements for rice on Japanese farms. Rice is still by far the most popular cereal food, and is very likely to remain so, unless an intensive program of reeducation is instigated.

'Friendly, Courteous People'

The trip to Japan was most interesting and enjoyable. The people were extremely friendly and courteous, sparing no effort to make me feel at home and among friends. A trip to a mill or bakery would always include a visit with the owner and his principal associates, during which hot or cold towels were furnished for refreshing one's self, followed by a drink of hot or cold tea, or pop or a coffee-like drink. Pleasantries and news items were exchanged and pictures generally taken. After touring a mill, an attendant always appeared with a clothes brush, and the refreshment program was repeated.

Sampling the many types of Japanese food is also quite an experience. An octopus may look formidable in an aquarium, but it is even more so when a tentacle is fried and served with vegetables on a plate. Cuttle fish, too, seem more properly zoological specimens than culinary delicacies. The Japanese, however, seem to like their tough texture and chew dried strips with enthusiasm, even referring to them as "Japanese chewing gum."

I found tempura (shrimp, fish, vegetables, etc., dipped in a special flour batter and deep-fat fried) a delicacy to tickle anyone's palate. While raw fish sounds formidable when cut in thin strips, and dipped in a sauce of crude monosodium glutamate, grated radishes and other ingredients, it is a real delicacy. Soybeans are prepared in many ways, such as soy protein, curd, soybean soup and sweetened soy protein roll filling. The immature beans are frequently boiled in the pod in salt water and hulled as eaten.

The Japanese do have some beef, and a steak from Kobe, beef-cooked in butter on a griddle with onions, celery, cabbage, etc., leaves little to be desired. Kobe beef apparently has special merit and is much advertised. It is claimed that farmers massage the fattening animals daily to assure proper temperament, flavor and texture.

Japanese fruits and melons are of exceptional quality and flavor and are abundant.

Living in a Japanese rural inn is also a very novel experience. A Japanese type of bed, which consists of a pad laid on the floor, will feel rather hard to Western visitors even when made up 5 or 6 layers thick instead of only one, as the Japanese sleep. Bathroom facilities, too, are different. If one is hesitant to bathe in the public bath, a private one is always available, but he is never quite sure that his skin will remain intact after a steep in water which seems to be just below the boiling point.

'Business, Pleasure Combined'

A dinner party with a group of Japanese is an affair where business and pleasure are very successfully combined. It will frequently start after 2:30-3 p.m. with a series of appetizers and drinks, continuing to 10-11 p.m., with waitresses serving a dual function as entertainers, interspersing games, singing and dancing with their duties as waitresses. Guests get into the spirit of the affair, and a thoroughly good time is usually enjoyed by everyone. All of which seems to indicate that our trip, while giving an insight to how milling and baking are done in Japan, also had its highly pleasurable moments. «

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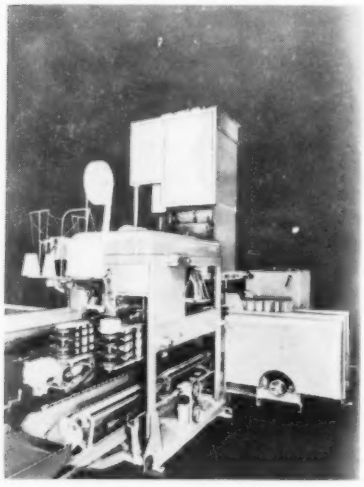
Bag Filling, Closing

Bemis Bro. Bag Co. announces development of a completely automatic system of filling and closing multiwall bags. The system also is said to be high speed and economical. It combines Bemis' automatic filler-scale, bag feeder and conveyor with an automatic closing machine devised by



Bemis. The system can fill and close up to 20 bags (2,000 lb.) of most applicable products per minute. The company states that this is a sustained speed not obtained by manual or machine operations now widely used. The system is applicable to any free-flowing product using open-mouth paper multiwall bags. It handles bags of various sizes, gusset or flat-tubed, with or without closing tape. An advancement in automation, it requires no operator, merely a part-time attendant to periodically refill the automatic bag feeder, which has a capacity of 400 bags. The feeder can be resupplied while the system continues to operate. First commercial installations are expected to be made soon. The automatic closing unit also has a leveling mechanism for even sewing and elimination of waste bag material when trimming from the top.

Circle No. 5052
On Reply Form for Details

Folder on 'Jetslingers'

A folder on four types of "Jetslingers," machines with short, high-speed belts to hurl free-flowing bulk materials into areas inaccessible to other mechanical means, is available from Link-Belt Co. The "Jetslingers" are offered for such purposes as ship trimming, boxcar and truck loading, warehouse and ground storage distribution of grain and other bulk materials. The four models described are wheel-mounted, suspended-swivel-mounted, wheel-mounted for low headroom, and bracket-suspended swivel-mounted. Dimensional data, line drawings and photographs of typical installations are included in the folder.

Circle No. 5053
On Reply Form for Details

Volumetric Feeder

Wallace & Tiernan, Inc., announces re-design of its volumetric feeder, Series A-690, to provide fourfold increase in capacity. The unit is now rated at 11.4 cu. ft. per hour. Capacities start at 0.0065 cu. ft. per hour. Feed rate has stepless adjustment over a 20 to 1 range. The basic operating principle of the feeder remains

unchanged. The feed section utilizes a rotating and reciprocating screw. This provides positive displacement feeding with a self-cleaning action. Flooding cannot occur, says Wallace & Tiernan. The reinforced plastic solution tank has been increased in size to 35 gal. It can be supplied with a triple-jet mixer or a mechanical mix-

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er For hard-to-wet chemicals, dual flush cones are now furnished. Other accessories make the feeder adaptable for a variety of installation conditions.

Circle No. 5054
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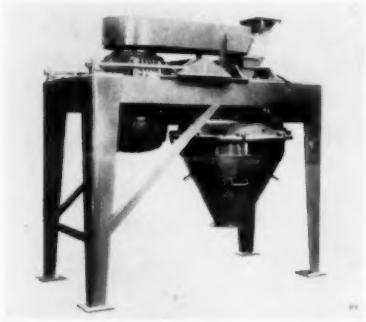
Impact Mill

Sturtevant Mill Co. has introduced the "Simpactor" multiple-peg impact mill, complementing its Pulver-Mill in milling operations. The Sturtevant "Simpactor," while basically similar to



other mills which employ the intermeshing-peg principle, incorporates design improvements allowing adjustment of degree of grind without shutting down the unit or cutting off product feed. Adjustments are possible simply by removing or adding pegs while the machine is in operation. Basically, the unit consists of the shaft and rotary assembly. Three concentric rows of rugged one-inch diameter mild steel pegs are located on the moving rotor and two on the stationary upper plate. When a change in grind is required, an operator merely pulls out as many of the upper pegs as desired, plugging the resulting hole by simply turning the peg upside down and reinserting it. The part of the peg projecting through the casting while the machine is grinding is of only sufficient length to close the opening through the casting. The end of the removed/reinserted peg becomes flush with the surface of the stationary plate below. When reinserted for grinding, the peg seats itself in a channel in the revolving rotor. A slanting wall, on which a liner may be applied to guard against abrading, surrounds the peg assemblies.

Circle No. 5055
On Reply Form for Details

Grain Transfer Hose

A bulletin covering a broad selection of flexible metal hose specially designed for gravity or pneumatic transfer of grains and bulk materials where resistance to severe abrasion and corrosion are required has been published by Universal Metal Hose Co. Featured are: "Steelflex" Type U-100 in standard weight (electro galvanized carbon steel); Type U-120 in light heavyweight, medium heavyweight, extra heavyweight and superweight (hot dipped galvanized carbon steel). Also described in the bulletin is "Easyflo" in standard and heavyweight, with special galvanized carbon steel or stainless steel liner. The company's Type "SJQC" couplers for mechanical clamp grip, and its Type "AQC" couplers for speedy action automatic lug grip to be used on pneumatic transfer systems are featured in the bulletin.

Circle No. 5056
On Reply Form for Details

Leveling Machinery

Lowell Industries, Inc., manufacturer of "Vibra-Check," has available the "Vibra-Shim" for use with "Vibra-

Check" to simplify leveling of machinery where uneven floor conditions exist. The company states that "Vibra-Shim" is impervious to plating acids, moisture, oils, greases, detergents, brine, solvents and other chemicals. Both vibration products can be used repeatedly because they will not cold form, absorb liquids or deteriorate, even under stringent working conditions, it is claimed. Once a machine is mounted on "Vibra-Check" and leveled with "Vibra-Shim," no further adjustment is said to be necessary. "Vibra-Shim" can be used as a direct shim to increase the height of "Vibra-Check" pads and to eliminate any metal to metal contact. "Vibra-Shim" is simply cut to size with scissors and placed in position.

Circle No. 5057
On Reply Form for Details

Data on Dry Feeder

B-I-F Industries offers its Belt Gravimetric Feeder, Model 37-04, for pre-

Please send me more information. I have circled code numbers of items in which I am interested.

5052	5053	5054	5055	5056	5057
5058	5059	5060	5061	5062	5063

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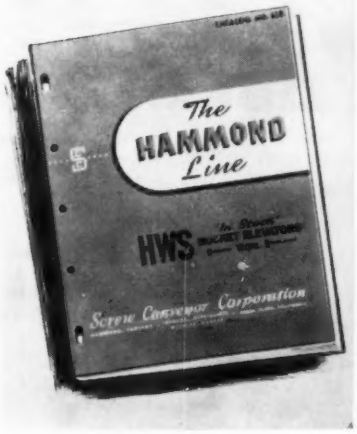
cise feeding by weight of such dry flowing materials as flour, feed and chemicals. The principal operating feature is maintenance of a constant weight of material on a moving belt by actuation of a positive-acting feed gate. The company claims effective, accurate use of this concept to develop a feeder suited for precise feeding by weight of almost any dry flowable material. A feed rate up to 3,000 lb. per minute with 50 lb. per cubic foot of material is claimed for the No. 37-04.

Circle No. 5058
On Reply Form for Details

Bucket Elevator Catalog

Screw Conveyor Corp. has ready for distribution a bucket elevator catalog. It features a series of "in-stock" and "non-stock" bucket elevators just about covering every capacity need from 685 to 7,070 bu. an hour for

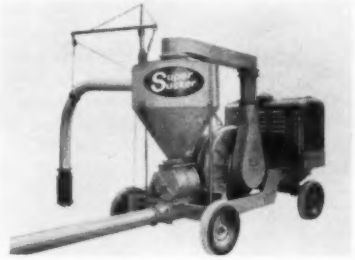


the "in-stock" series and 2,280 to 8,340 bu. an hour for the "non-stock" series. The elevators are said to be ideal for handling small grain, mill stock and similar free-flowing materials. They are of double leg construction, enabling framing of each elevator into a rugged unit by means of heavy flanges at each end of 10 ft. sections. This is said to make the elevator self-supporting for a rugged, dependable installation. The elevators come equipped with the Winona grain bucket for general service and in situations where flour, bran, shorts and other soft stocks are handled. "Vented" Winonas are furnished if necessary. The catalog shows many individualized features in detail, with illustrations.

Circle No. 5059
On Reply Form for Details

Grain Conveyor

A "Super Sucker" grain pump, designed exclusively for heavy duty marine use, is now available for either shipboard or dockside use. Manufactured by Myers-Sherman Co., maker



of the Airmaster Grainvayor, the "Super Sucker" pneumatic grain conveyor is specifically for the rugged conditions of marine service. The company states that the units can reduce turn around time to an average of 5 to 7 days for T-2 tankers, enabling unloading as fast as grain can be received, and permitting users maximum advantage of dispatch profits. The "Super Sucker" features diesel power, an extra heavy frame, larger shaft and bearings, larger main drive, and abrasion-resistant steel vacuum chamber. An aluminum compressor with cast aluminum blades is said to result in 60% less inertia load, along with reducing bearing loads, clutch wear and maintenance costs. A special hydraulic rotary air-lock valve operates in either direction, instantly reversing to clear itself of any foreign material.

Circle No. 5060
On Reply Form for Details

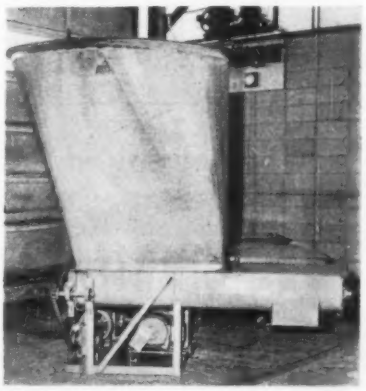
Conveyor System

A drag-type conveyor system said to clean itself automatically as it operates is available from Industrial Machinery Co. Designed to handle all types of dry, free-flowing materials, the system's features, as listed by the manufacturer, include ability to move materials with less horsepower; built-in protection against detracking of conveyor flights or conveyor chain; complete elimination of metal-to-metal contact at any point in the system except for sprockets on each end of the conveying trough; and "virtually 100% maintenance-free operation."

Circle No. 5061
On Reply Form for Details

Twin-Screw Feeder

A twin-screw feeder and hopper, applicable to milling, is offered by Finco, Inc. The unit has right and left hand 9 in. screws, rotating in opposite directions, which feed up to 20 tons an hour. Pitch of the twin screws can be varied from one-third to full pitch, independently, to provide uniform feeding across the 22 by 40 in. opening into the hopper. A continuous serpentine chain drive allows both screws to be driven in opposite directions with a single chain and a 2 h.p. variable speed drive unit. The feeder/hopper is constructed of heavy



duty 14-gauge casing and has a 16-gauge cover. When used for handling flour, sugar and other foodstuffs, a special epoxy paint is applied.

Circle No. 5062
On Reply Form for Details

Sedimentation Test Kit

Burrows Equipment Co. has added to its line of grain and seed testing equipment the Zeleny sedimentation test kit. Parke Burrows, president of the firm, says that the test kit is made to conform to U.S. Department of Agriculture specifications. Burrows Equipment also offers, without charge, a government bulletin, "Wheat Strength and the Sedimentation Test."«

Circle No. 5063
On Reply Form for Details

TICKER REPORT...

THE NEW YORK STOCK EXCHANGE

Quotations on baking, milling and allied stocks listed on the New York Stock Exchange:

	1961 High	1961 Low	Nov. 27, 1961 Close	Dec. 4, 1961 Close
Allied Mills, Inc.	52¾	36½	43⅜	42¾
Allis-Chalmers	29½	19	20½	20¼
American Bakeries Co.	47⅜	36	42¼	40
American Cyanamid	50	39¾	46⅞	44⅜
Archer-Daniels-Midland Co.	43⅜	33½	38¼	37½
Borden	79¼	55⅜	78⅜	75⅞
Continental Baking Co.	58	44⅝	56⅜	54⅝
Corn Products Refining Co.	63⅞	45⅝	63	59⅛
Crown Zellerbach Corp.	66⅞	51¼	64⅜	66¼
Pfd. $4.20	95½	89¾	92¼	92½
Dow Chemical	85⅜	70	74¼	75¼
General Baking Co.	10¼	6¼	6⅜	6¼
Pfd. $8	140	75	83¾	80
General Foods Corp.	107¾	68⅝	101½	100¼
General Mills, Inc.	38¾	31	33⅞	33¾
Pfd. 5%	113	106¼	....	111½
Merck & Co.	91½	74	88½	89¾
Monsanto Chemical Co.	58⅜	44⅛	54¾	52⅝
National Biscuit Co.	92¼	70½	91¼	91¼
Pfd. $7	157	149	155	156
Pfizer, Chas.	53⅞	30⅝	52¾	50¼
Pillsbury Co.	72¼	44⅛	70	72¼
Procter & Gamble	101½	73	96	94½
Quaker Oats Co.	92⅛	57½	89¾	90
Pfd. $6	145	131	141½	141¾
St. Regis Paper Co.	41⅜	31½	37⅞	38¼
Standard Brands, Inc.	91	52¼	84½	81¾
Pfd. $3.50	78¾	72¼	77½	76½
Sterling Drug	99¼	67	94½	93½
Sunshine Biscuits, Inc.	122	101½	....	118
United Biscuit of America	45½	33¾	42⅞	43¾
Ward Baking Co.	13⅞	9	9½	9¼
Pfd. $5.50	86¾	67	68	69½
West Va. Pulp & Paper Co.	42¾	33⅛	37¼	38⅝
Pfd.	99½	93	....	99

Stocks not traded:

	Bid	Asked
Allis-Chalmers, $3.25 Pfd.	102	104
Continental Baking Co., $5.50 Pfd.	106⅜	107¾
Corn Products Refining Co., $7 Pfd.	91½	93½
Merck & Co., $3.50 Pfd.	85	86½
Pillsbury Co., $4 Pfd.	96	98½
St. Regis Paper Co., $4.40 Pfd.	96⅝	99

THE AMERICAN STOCK EXCHANGE

Quotations on baking, milling and allied stocks listed on the American Stock Exchange:

	1961 High	1961 Low	Nov. 27, 1961 Close	Dec. 4, 1961 Close
Burry Biscuit Corp.	35½	19¼	28⅞	29⅝
Horn & Hardart Corp. of N. Y.	53	35¼	40¼	39¼
Pfd. $7	189¾	145	165	168
Wagner Baking Co.	10¾	4	4⅜	5
Pfd.	85	66	67	66

Stocks not traded:

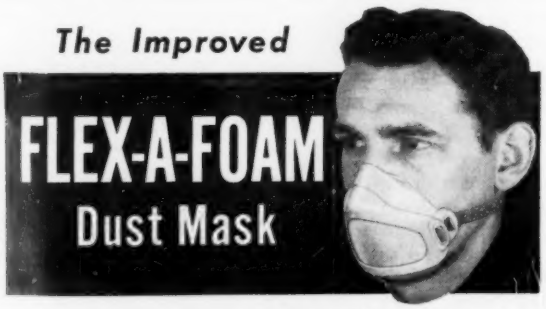
	Bid	Asked
Horn & Hardart Corp. of N. Y., $5 Pfd.	97½	99½
Seaboard Allied Mills	7	7⅜

CANADIAN STOCKS

	1961 High	1961 Low	Nov. 24, 1961 Close	Dec. 1, 1961 Close
Canada Bread	7½	3¾	7¼	7
Pfd. B	55⅛	49⅛	*56½	*57
Can. Bakeries	8⅛	4½	7	6
Can. Food Prod.	9	4½	6½	6⅛
1st Pfd.	56	44⅛	54	53½
2nd Pfd.	55	37½	50	49
Catelli Food	39⅛	32⅝	45	34
Cons. Bakeries	11⅜	7⅛	10½	9¾
Dover Ind.	12¼	10¼	11¼	*7⅞
Pfd.	10¼	9½	10¼	*9¼
Federal Grain	69½	47	51⅜	50½
Pfd.	29⅛	27⅜	29	29
Gen. Bakeries	13¼	7¼	12	12
Maple Leaf Mills	18	12¼	16¾	17⅛
Pfd.	110	100	104	104¼
McCabe Grain	36	32¼	35¼	35¼
Ogilvie Flour	56½	47	52	54
Pfd.	145	137	141	141
United Grain, A	16¾	15½	16¾	16⅛
Weston, G., A	22½	17¼	20¼	19¾
B	24¼	18½	21½	22
Pfd. 4½%	98	90	95	95
Pfd. 6%	110½	105	109½	109¾

*Less than board lot.

The Improved



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Season's Greetings from Russell Miller-King Midas

The painting above is reproduced in full color on the Russell Miller-King Midas calendar for 1962. This yearly institution is ready now for our many customers. Available only from your Russell Miller-King Midas representative.

RUSSELL MILLER-KING MIDAS MILLS

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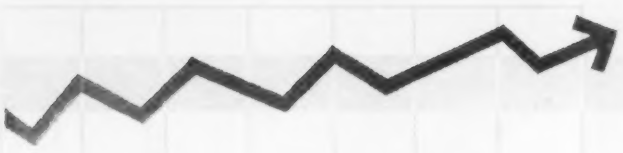


FLOUR PRODUCTION

A Statistical Service Provided Continuously for Readers of The Northwestern Miller for More than Half a Century.

WEEKLY FLOUR PRODUCTION, IN SACKS (CWT.)

Flour production in principal manufacturing areas by mills reporting currently to THE Northwestern MILLER with relationship of production to capacity and to the total estimated output of all mills in the U.S. expressed in percentages:

	Nov. 19-26, 1961	*Previous week	Nov. 20-27, 1960	Nov. 21-28, 1959	Nov. 22-29, 1958
Northwest	677,892	809,982	624,719	769,987	810,205
Southwest	1,538,644	1,690,047	1,403,786	1,621,346	1,516,475
Buffalo	532,521	559,957	533,643	575,802	586,666
Central and Southeast	523,520	598,247	527,858	651,799	622,974
Pacific Coast	424,970	490,393	430,578	494,020	465,194
Totals	3,697,547	4,148,626	3,520,584	4,112,954	4,001,514
Percentage of total U.S. output	74.4	74.4	75	75	75
Estimated total U.S. production	4,969,821	5,576,110			
Accumulated total this month	19,391,272	14,421,451			

*Revised.

	—Percentage of capacity operated in 5-day week—					Crop year flour production ——July 1 to——	
	Nov. 19-26, 1961	Previous week	Nov. 20-27, 1960	Nov. 21-28, 1959	Nov. 22-29, 1958	Nov. 26, 1961	Nov. 27, 1960
Northwest	91	109	86	106	121	16,529,448	15,954,220
Southwest	117	129	106	126	115	32,271,064	30,565,597
Buffalo	105	111	102	117	124	10,884,635	10,789,309
Central and S.E.	81	93	81	101	109	12,824,919	13,357,452
Pacific Coast	90	104	92	106	108	9,883,755	9,259,301
Totals	101	113	95	114	120	82,393,821	79,925,879

NORTHWEST

Minneapolis

	5-day week capacity	Flour output	% capacity
Nov. 19-26	185,500	†174,577	94
Previous week	185,500	*209,691	113
Year ago	194,500	169,632	87
Two years ago	231,000	215,505	93
Five-year average			96
Ten-year average			96

*Revised. †Four-day week.

Principal interior mills in Minnesota, including St. Paul, North Dakota, Montana and Iowa:

	5-day week capacity	Flour output	% capacity
Nov. 19-26	558,870	†503,315	90
Previous week	558,870	*600,291	107
Year ago	534,250	455,087	85
Two years ago	494,500	554,786	112
Five-year average			104
Ten-year average			96

*Revised. †Four-day week.

CENTRAL AND SOUTHEASTERN

Mills in Illinois, Ohio, Michigan, Wisconsin, Indiana, Kentucky, North Carolina, Tennessee, Virginia, Georgia and eastern Missouri:

	5-day week capacity	Flour output	% capacity
Nov. 19-26	642,700	†523,520	81
Previous week	642,700	*598,247	93
Year ago	651,450	527,858	81
Two years ago	643,750	651,799	101
Five-year average			94
Ten-year average			88

*Revised. †Four-day week.

SOUTHWEST

Kansas City

	5-day week capacity	Flour output	% capacity
Nov. 19-26	225,250	†268,649	119
Previous week	225,250	279,281	124
Year ago	254,250	235,239	93
Two years ago	221,750	283,654	116
Five-year average			106
Ten-year average			100

†Four-day week.

Representative Mills, Outside of Kansas City (Including Wichita and Salina)

	5-day week capacity	Flour output	% capacity
Nov. 19-26	1,084,395	†1,269,995	117
Previous week	1,084,395	*1,410,766	130
Year ago	1,067,250	1,168,547	109
Two years ago	1,068,800	1,337,692	125
Five-year average			110
Ten-year average			100

*Revised. †Four-day week.

BUFFALO

	5-day week capacity	Flour output	% capacity
Nov. 19-26	505,500	†532,521	105
Previous week	505,500	559,957	111
Year ago	522,000	533,643	102
Two years ago	494,500	575,302	116
Five-year average			108
Ten-year average			104

†Four-day week.

PACIFIC COAST

Principal Mills on the Pacific Coast

California, Oregon and Washington Mills

	5-day week capacity	Flour output	% capacity
Nov. 19-26	471,200	†424,970	90
Previous week	471,200	*490,393	104
Year ago	466,500	430,578	92
Two years ago	466,500	494,020	106
Five-year average			96
Ten-year average			90

*Revised. †Four-day week.

DURUM PRODUCTS OUTPUT

Durum products output of mills reporting to THE Northwestern MILLER, in sacks, based on five-day week:

	5-day week capacity	Wkly. production	% of capacity
Nov. 19-26	165,500	†156,525	95
Previous week	165,500	*192,801	116
Year ago	156,500	156,868	100

	Crop year production
July 1-Nov. 26, 1961	3,831,262
July 1-Nov. 27, 1960	3,912,881

*Revised. †Four-day week.

Canadian Price Adjustments

The price adjustment figures announced by the Canadian Wheat Board and in effect Dec. 7 are as follows. To U.K. and other European destinations via Canadian and U.S. Atlantic ports, also via St. Lawrence, Churchill, Canadian and U.S. Pacific ports, 4⅝¢ bu.; to other countries, excluding U.S. and territories, from Canadian and U.S. Atlantic ports, 9⅛¢ bu.; from St. Lawrence and Churchill, 8⅝¢ bu.; Canadian and U.S. Pacific ports, 14⅝¢ bu. The above adjustment prices apply to wheat milled in Western Canada. For wheat milled in the Bayport area the rate is ½¢ bu. less, while for wheat milled in the Humberstone area and in the Toronto area the rate is 1¢ bu. less. Wheat milled in the Montreal area is 2¢ bu. less. «

Production for Nov. 19-26 is at the left; for Nov. 26-Dec. 3 appears here

WEEKLY FLOUR PRODUCTION, IN SACKS (CWT.)

Flour production in principal manufacturing areas by mills reporting currently to THE Northwestern MILLER with relationship of production to capacity and to the total estimated output of all mills in the U.S. expressed in percentages:

	Nov. 26-Dec. 3, 1961	Previous week	Nov. 27-Dec. 4, 1960	Nov. 28-Dec. 5, 1959	Nov. 29-Dec. 6, 1958
Northwest	828,729	677,892	687,312	757,456	518,883
Southwest	1,589,264	1,538,644	1,504,136	1,616,626	1,208,116
Buffalo	565,721	532,521	538,307	577,456	445,719
Central and Southeast	587,956	523,520	642,146	649,308	423,473
Pacific Coast	428,580	424,970	479,594	525,428	341,822
Totals	4,000,250	3,697,547	3,851,495	4,126,274	2,938,018
Percentage of total U.S. output	74.4	74.4	75	75	75
Estimated total U.S. production	5,376,680	4,969,821			
Accumulated total this month	24,767,952	19,391,272			

	—Percentage of capacity operated in 5-day week— Nov. 26-Dec. 3, 1961	Previous week	Nov. 27-Dec. 4, 1960	Nov. 28-Dec. 5, 1959	Nov. 29-Dec. 6, 1958	Crop year flour production ——July 1 to—— Dec. 3, 1961	Dec. 4, 1960
Northwest	111	91	94	104	78	17,358,177	16,641,532
Southwest	121	117	114	125	92	33,860,328	32,069,733
Buffalo	112	105	103	117	94	11,450,356	11,327,616
Central and S.E.	91	81	99	101	74	13,412,875	13,999,598
Pacific Coast	91	90	103	113	108	10,312,335	9,738,895
Totals	109	101	104	114	88	86,394,071	83,777,374

NORTHWEST

Minneapolis

	5-day week capacity	Flour output	% capacity
Nov. 26-Dec. 3	185,500	219,718	118
Previous week	185,500	†174,577	94
Year ago	194,500	218,229	112
Two years ago	231,000	228,392	99
Five-year average			96
Ten-year average			96

†Four-day week.

Principal interior mills in Minnesota, including St. Paul, North Dakota, Montana and Iowa:

	5-day week capacity	Flour output	% capacity
Nov. 26-Dec. 3	558,870	609,011	108
Previous week	558,870	†503,315	90
Year ago	534,250	469,083	88
Two years ago	494,500	529,064	107
Five-year average			104
Ten-year average			96

†Four-day week.

CENTRAL AND SOUTHEASTERN

Mills in Illinois, Ohio, Michigan, Wisconsin, Indiana, Kentucky, North Carolina, Tennessee, Virginia, Georgia and eastern Missouri:

	5-day week capacity	Flour output	% capacity
Nov. 26-Dec. 3	642,700	587,956	91
Previous week	642,700	†523,520	81
Year ago	651,450	642,146	99
Two years ago	643,750	649,308	101
Five-year average			94
Ten-year average			88

†Four-day week.

SOUTHWEST

Kansas City

	5-day week capacity	Flour output	% capacity
Nov. 26-Dec. 3	225,250	286,130	127
Previous week	225,250	†268,649	119
Year ago	254,250	282,163	111
Two years ago	221,750	266,784	120
Five-year average			106
Ten-year average			100

†Four-day week.

Representative Mills, Outside of Kansas City (Including Wichita and Salina)

	5-day week capacity	Flour output	% capacity
Nov. 26-Dec. 3	1,084,395	1,303,134	120
Previous week	1,084,395	†1,269,995	117
Year ago	1,067,250	1,221,973	114
Two years ago	1,068,800	1,349,842	126
Five-year average			110
Ten-year average			100

†Four-day week.

BUFFALO

	5-day week capacity	Flour output	% capacity
Nov. 26-Dec. 3	505,500	565,721	112
Previous week	505,500	†532,521	105
Year ago	522,000	538,307	103
Two years ago	494,500	577,456	117
Five-year average			108
Ten-year average			104

†Four-day week.

Millfeed Production

Mills in the Northwest, Southwest and at Buffalo, representing 75% of the combined flour milling capacities of those areas, reported production of 56,291 tons of millfeed for Nov. 26-Dec. 3, compared with an output of 51,510 in the corresponding week a year ago. Production for the previous week of Nov. 19-26 was 51,875, compared with 48,245 in the corresponding week of 1960.

PACIFIC COAST

Principal Mills on the Pacific Coast

California, Oregon and Washington Mills

	5-day week capacity	Flour output	% capacity
Nov. 26-Dec. 3	471,200	428,580	91
Previous week	471,200	†424,970	90
Year ago	466,500	479,594	103
Two years ago	466,500	525,428	113
Five-year average			96
Ten-year average			90

†Four-day week.

DURUM PRODUCTS OUTPUT

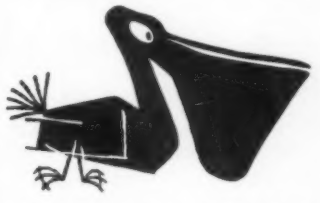
Durum products output of mills reporting to THE Northwestern MILLER, in sacks, based on five-day week:

	5-day week capacity	Wkly. production	% of capacity
Nov. 26-Dec. 3	165,500	182,809	110
Previous week	165,500	†156,525	95
Year ago	156,500	156,208	100

	Crop year production
July 1-Dec. 3, 1961	4,014,071
July 1-Dec. 4, 1960	4,069,089

†Four-day week.

FILLS THE BILL



For Timely, Useful Industry Information

The MILLER

The Posters Always Go Up

BEFORE

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Special AOM Issue

April 30, 1962

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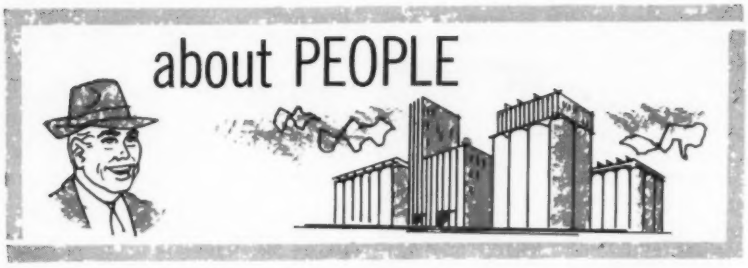

Now rejoined as a family, this time in the Philippines, are **S/Sgt. John W. Cutler**, his wife, **Eleanor**, and their four children. Mrs. Cutler is the daughter of the Association of Operative Millers' executive vice president, **Don S. Eber**, and his wife, **Della**. Sgt. Cutler is stationed at Clark Air Force Base in the islands, his second tour of duty overseas. The family previously spent three years in England, and this time they expect to be away from the U.S. two years.

●

William C. Kueffner, Bay State Milling Co., recently completed a course in executive development at Stanford University's graduate school, a three-month program attended by 59 businessmen from the U.S. and foreign countries. The course covered marketing, finance, labor relations and business policy. Mr. Kueffner's work at Stanford is part of a continuing program of executive development within the Bay State organization, says **Paul B. Miner**, executive vice president and general manager. Formerly with the Pillsbury Co., Mr. Kueffner joined Bay State in sales six years ago at the firm's general offices in Winona, Minn. Since returning from Stanford he has been headquartered with the company's grain department in Minneapolis.

William Kueffner

●

Two divisions of St. Regis Paper Co. have announced new appointments. The bag division has named **Frank W. Myers, Jr.**, as assistant director of operations and sales manager of its western area sales organization. The area includes sales offices and/or bag plants in Tacoma, Wash.; San Francisco, San Leandro and Los Angeles, Cal., and Phoenix, Ariz. Mr. Myers, who reports to **Thomas J. Fleischman**, director of operations, will headquarter in St. Regis' San Francisco office. He was formerly general manager of the company's Mid-America bag division in Kansas City.

F. W. Myers, Jr.

Richard C. Paine, formerly sales representative in the northern California market, has been appointed administrative manager of the western area. **George R. Stone** becomes acting southern regional manager with headquarters in Los Angeles. Mr. Stone was formerly district manager in Los Angeles.

Charles K. Watters, formerly sales

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WESTERN OFFICE: WINNIPEG

representative in the Arizona area, has been appointed district manager of Los Angeles, succeeding Mr. Stone.

Thomas R. Mangelsdorf has been appointed sales representative for the division in Phoenix.

Mark N. Thompson has rejoined St. Regis as a sales representative in Los Angeles. He replaces **William C. Meloy** who is returning to New York for assignment to the company's bag manufacturing staff.

Jack R. Jones has been appointed northern regional manager of the western area, with headquarters in San Francisco.

Three new appointments in the Mid-America bag division of St. Regis were announced as follows:

Jack A. Larigan has been appointed general manager of Mid-America with headquarters in Kansas City. Formerly sales manager for the Mid-America division, he succeeds Mr. Myers.

Daniel H. Hundley, formerly district manager in St. Louis, has been appointed sales manager of Mid-America, succeeding Mr. Larigan. Mr. Hundley will also make his headquarters in Kansas City.

G. C. "Mike" Hamilton has been appointed sales representative in St. Louis.

●

Daniel Garcia has been appointed Caribbean area representative for Great Plains Wheat, Inc., succeeding **Marx F. Koehnke**, now named program coordinator in the association's Washington office. Headquartering at Bogota, Colombia, Mr. Garcia will be responsible for Central America, island countries of the Caribbean, and Venezuela.

●

Continental Grain Co. has selected **Myron R. Laserson** as regional manager of its Texas operations, replacing **Tullis Cofer**, vice president and regional manager the past 15 years. Mr. Cofer, however, will continue to serve Continental as a consultant, says **Michel Fribourg**, president. Mr. Laserson has been assistant to **George A. Kublin**, manager of the grain firm's Kansas City office, for the past nine months. He joined Continental in 1954 as one of the first participants in its merchandising training program. Initially, he was assigned to Kansas City, remaining there until 1956, when transferred to the export department in New York, along with spending six months at the office of Continental's associate company in Paris. Mr. Laserson also has been on the merchandising staffs at Portland and St. Louis. He returned to Kansas City early this year. He also has attended the Program for Management Development at the Harvard Business School, under the auspices of Continental. Mr. Cofer has been a key figure in the milling and grain business of Texas since 1920. The son of a frontier sheriff and rancher, he grew up in Weatherford, Texas, attended college there, and was employed first in a flour mill at that community. Mr. Cofer went with the Burrus interests in 1928 as manager of what was then the new Burrus elevator at Lubbock. He was associated with Burrus 15 years, most of the time as sales manager and partner of the affiliated J. C. Crouch Grain Co. He also was actively engaged in a general grain brokerage business in Dallas for three years. He joined Continental in 1945 as manager of its office in Ft. Worth, moved to Houston in 1946 as co-manager with the late Finis E. Cowan of the milling and grain operation on the Houston ship channel acquired by Continental late in 1945. As Continental expanded its Texas operations through the years, his duties were broadened and developed into the position of vice president and regional manager of the Texas unit.

Tullis Cofer

Myron R. Laserson

●

Einar T. (Pat) Pettersen, manager of the downtown Minneapolis offices of Cargill, Inc., has retired after 28 years of service with the grain handling firm. He joined Cargill in 1933 as manager of its branch at Marshall, Minn., subsequently was with the company's grain division offices in Portland, St. Louis and Minneapolis. Mr. Pettersen was a member of the firm's building planning committee, and was active in initiating and carrying out the project for its downtown office complex, now under construction. He is president of Cargill's 25 Year Club, and is a past director of the Northwest Country Elevator Assn., of the Grain and Feed Dealers National Assn., and a former member of the Portland Grain Exchange, the Minneapolis Grain Exchange, and the St. Louis Merchants Exchange. Mr. Pettersen's plans include moving to a

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new home on the Olympic Peninsula, near Tacoma, Wash.

●

John F. Finn, assistant general counsel for General Mills, Inc., since February of 1958, has been appointed director of the legal department. He will continue to be responsible to **Edward K. Thode**, vice president, secretary, and general counsel for GMI. Mr. Finn joined the legal department in 1946 as an attorney in general law, was elected assistant secretary and assistant treasurer in 1951.

John F. Finn

●

Member of the board of English Grain Feeds, Burton-On-Trent, England, is **Adrian Rutherford** who was with the Pillsbury Co. for some years until returning to his native England in the summer of 1960. The newly reorganized firm is owned by A. V. Matlock, Ltd., and manufactures dried brewers yeast tablets and malt bread.

●

Canada's No. 1 baker in 1962 will be **Harold A. Vivian**, vice president, Christie's Bread, Ltd., Toronto, by virtue of his election as president of the National Council of the Baking Industry. Christie's Bread is one of the three Canadian subsidiaries of National Biscuit Co. of New York. Mr. Vivian entered the food business as a grocery clerk and delivery boy, moving into baking in the early 1930's as a "student" salesman. He later became a sales supervisor, manager, general sales manager, and now is in charge of all sales, along with serving as a company director.

●

The Allied Trades Committee of District 4, Association of Operative Millers, meeting for its annual session in Minneapolis, has elected officers for the coming year. **David P. Tellett**, Allis-Chalmers Manufacturing Co., becomes chairman, replacing **M. L. Olson**, the Simon-Carter Co., this year's chairman. **Ken W. Wakershauser**, THE Northwestern MILLER, formerly secretary, moves up to the position of vice chairman, replacing Mr. Tellett in that post. **Lyle P. Carmony**, Sterwin Chemicals, Inc., formerly treasurer, has been elected secretary, and **J. F. Houston**, Wallace & Tiernan, Inc., takes over Mr. Carmony's former duties as treasurer.

●

Interstate Bakeries Corp. has announced several appointments. **Jack G. Willcuts** becomes eastern division bread sales manager on Jan. 1, maintaining his office in Kansas City. He has been with the firm 19 years, and moves up from western division bread sales manager. **Fred P. Barr**, plant manager in Los Angeles since 1958, takes over the duties of western division bread sales manager, also effective Jan. 1. He has been with Interstate since 1947 in various capacities. **Dallas O. Hallett** has been appointed as manager of Interstate's Weber's Bread bakery in Los Angeles. He has served with the company 11 years in sales operations. Announcement of the appointments was made by **John R. Dow**, president.

●

William J. Balke has been appointed as a chemist in the foods laboratory of the chemicals product development department of Atlas Chemical Industries, Inc., Wilmington, Del. Mr. Balke comes to Atlas from General Foods Corp., and prior to that was with the H. J. Heinz Co.

●

Visiting milling centers in the U.S. is **Akio Yasuda**, a member of the milling division in the Tsurumi plant of Showa Sangyo Co., Ltd., Japanese milling firm.«

CLASSIFIED DEPARTMENT

Advertisements in this department are 20¢ per word; minimum charge, $3.00. (Count six words for signature.) Add 25¢ per insertion for forwarding of replies if keyed to office of publication. Situations Wanted advertisements will be accepted for 15¢ per word. $2.25 minimum. Add 25¢ per insertion for keyed replies. Display Want Ads $20 per inch per insertion. All Want Ads cash with order.

◆ ◆ ◆

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BAY STATE EXPANSION

Construction has begun on a new office addition at Bay State Milling Co.'s headquarters in Winona, Minn. The firm's accounting department will occupy the new space. The vacated area in the present facility will be occupied by the company's expanding sales department.«

ADDRESS CORRECTION

The address of Francis M. Franco was wrongly quoted in the "Letters to the Editor" feature in the last issue of THE MILLER. Mr. Franco's correct address is 60 East 42nd St., New York 17, N.Y.«

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OGILVIE has provided milling leadership in Canada for more than a century and half.

Today, from its plants and offices all across Canada, Ogilvie produces and sells an astonishing variety of products.

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Maple Leaf's Consolidated Net Profit Up 11%

MAPLE LEAF MILLS, Ltd., Toronto, which has taken in stride a disastrous fire, the arduous work of reconstruction, and a major consolidation, all in little more than a year, closed its books July 31 with a net profit figure up 11% from its previous annual fiscal period.

Furthermore, Maple Leaf is engaged in some new projects—including rebuilding of its fire-ravaged Port Colborne mill—as it strides aggressively along in its second 50 years of existence.

Consolidated net profit for the year now closed reached $2,205,662 ($1.39 a common share) compared with $1,975,229 during 1959-60.

Pinning down operations for the four months ended July 31, 1961, "they were most satisfactory," say J. D. Leitch, chairman, and Clifford E. Soward, president, reviewing the April 1 merger of Toronto Elevators, Ltd., with Maple Leaf Milling Co., Ltd., and Purity Flour Mills, Ltd.

The process of integrating is proceeding satisfactorily, but will not be completed until new offices are ready next spring, say the company's officers.

In the matter of new projects, the rebuilt Port Colborne flour mill, to be ready for start-up early in 1962, is expected to rank as one of the finest in the world, incorporating all the latest techniques of automatic operation, along with bulk storage of all finished flour and byproducts.

Capacity being smaller than the mill burned out, Maple Leaf expects full-time operation right from the start. In addition, the staff needed to operate the plant will be assisted by a system of centralized controls designed to provide a high degree of labor efficiency.

The company's July 31 balance sheet shows current assets of $55,655,400 and liabilities of $39,659,164, indicating a working capital of $15,996,236. A year ago, combined working capital of Maple Leaf Milling and Toronto Elevators was $13,715,152. Earned surplus on July 31, 1961, totaled $21,258,829.

Mr. Leitch and Mr. Soward see indications that Canada's export flour shipments this year will not reach the quantity shipped during the past three years. Accordingly, their dependence on export flour business has been greatly minimized by reduced capacity of the Port Colborne mill and wider diversification of the new company's business.

As to the signs which they see indicative of lowered exports, they are: (1) Canada's smaller wheat crop and the tendency to raise prices; (2) continued pressure on world markets by the U.S. government to liquidate surplus stocks of both wheat and flour under Public Law 480; (3) continued expansion of local milling capacity in markets formerly and traditionally Canadian.

"Nevertheless, the export of flour

Maple Leaf Mills, Ltd.

And Subsidiaries (Other than Controlled Bakery Companies)

Consolidated Balance Sheet, July 31, 1961

ASSETS

CURRENT:		
Cash		$ 164,834
Accounts and bills receivable less allowance for possible loss in collection		19,584,154
Accounts receivable from controlled bakery companies		105,978
Contract sales, due on future delivery of grain and other products		5,158,122
Insurance proceeds and claims receivable		934,387
Inventories—		
Wheat held as agent for The Canadian Wheat Board, at cost	$15,973,584	
Other grains, at market	4,263,646	
Flour, cereals, feed and other products and materials, at the lower of cost or market	8,917,750	29,154,980
Prepaid expenses		552,945
Total current assets		$55,655,400
INVESTMENTS:		
Shares of controlled bakery companies based on revaluation by the management in 1926 (approximate market value $2,243,600)	$ 2,442,728	
Other investments, mortgages, exchange seats and properties, less amounts written off	1,805,850	4,248,578
FIXED:		
Real estate, plant and equipment	$36,299,219	
Ship under construction, at cost	863,179	
	$37,162,398	
Less accumulated depreciation	20,320,020	
	$16,842,378	
Ocean tanker, at cost, under charter to Imperial Oil, Ltd.	$ 9,844,628	
Less secured ship obligations	7,235,634	2,608,994	19,451,372
OTHER:		
Insurance proceeds held by a trustee for bondholders	$ 4,188,037	
Inventory of repair parts and supplies	56,415	
Patents, trademarks and goodwill	3	4,244,455
		$83,599,805

LIABILITIES

CURRENT:	
Bankers' advances (secured)	$28,354,444
Notes payable	5,800,000
Owing for undelivered purchases of grain and other products (secured)	2,039,582
Other grain and commodity commitments	240,450
Accounts and wages payable and accrued charges	5,683,061
Income and other taxes payable	1,141,945
Funded debt payable within one year	219,500
Total current liabilities	$43,478,982
Funded Debt (not including $7,235,634 secured ship obligations being serviced by charter revenues from Imperial Oil, Ltd., and an indemnity fund, deducted from asset	9,879,500
Accumulated tax reductions applicable to future years	1,890,000
SHAREHOLDERS' EQUITY:	
Capital stock	
Authorized—75,000 preference shares class A, par value $100 each	
18,628 5½% preference shares class B (cumulative, redeemable and voting), par value $100 each	
4,000,000 common shares without par value	
Issued—18,627.04 preference shares class B	$ 1,862,704
1,519,092.85 common shares	4,567,272
	$ 6,519,976
Less 5,390 common shares held by a subsidiary	4,270
	$ 6,515,706
Contributed surplus	576,788
Earned surplus	21,258,829	28,351,323
	$83,599,805

STATEMENT OF CONSOLIDATED EARNINGS

Earnings from operations before deducting the charges set out below		$ 6,769,707
Dividends from controlled bakery companies		143,396
Profit on sale of fixed assets		60,521
		$ 6,973,624
DEDUCT:		
Interest on funded debt	$ 499,105	
Depreciation	1,626,677	
Appropriation for employees' pensions	443,380	2,569,162
Profit before deducting income taxes		$ 4,404,462
Income taxes		2,198,800
Net profit for the year		$ 2,205,662

STATEMENT OF CONSOLIDATED EARNED SURPLUS

Balance Aug. 1, 1960			$15,473,213
ADD:			
Profit for the year			2,205,662
Excess of fire insurance over the net book value of property destroyed and certain related expenses			4,604,982
			$22,283,857
DEDUCT:			
Expenses of amalgamation		$ 121,176	
Dividends—			
Preference shares	$ 95,466		
Common shares	808,386	903,852	1,025,028
Balance July 31, 1961			$21,258,829

STATEMENT OF CONSOLIDATED CONTRIBUTED SURPLUS

Balance Aug. 1, 1960	$ 576,715
Discount on purchase of preference shares for cancellation	73
Balance July 31, 1961	$ 576,788

for the industry as a whole is important, and Maple Leaf will continue to work with the Canadian Wheat Board and government authorities in exploring all possible means of meeting competition in Canada's traditional markets," add Mr. Leitch and Mr. Soward.

Details of Operations

Going into details of 1960-61 operations, the company's annual report to shareholders gives summaries of several areas of operations:

In family flour, sales were again maintained at a satisfactory level during the past year. Regional marketing objectives were achieved, with strong advertising continued throughout the period to consolidate sales gains.

There was expansion of bulk flour sales to biscuit firms, bakers and industrial users the past year, according to the report, due to expansion of business and the development and marketing of new products, continued research and improved services to the baking industry.

The company also reports that vigorous merchandising of its line of cake mixes increased substantially its share of the total market for these products during 1960-61.

Regarding its far-flung elevator and grain merchandising operations, they appear to be "holding the line." With costs high—mainly labor and repairs—and revenue controlled by maximum tariff charges set by the Board of Grain Commissioners, the company does not see justification for building of new storage space or any extension of existing facilities.

Every effort has been made, the report states, to build up grain volume direct to ocean shipping through the Toronto elevator because of its direct location on the St. Lawrence Seaway. Facilities are ample and efficient for this type of business, but in many cases the ocean vessels are not equipped to handle grain as fast as the facilities can load. Despite this, the company did load five ocean ships during the season covered.

"Our operations in grain merchandising in Toronto and Montreal have been successful during the year, and we have enjoyed larger volume," report the company's officers. The year was a violent and erratic one in flax and soybean activities, and partial crop failure in Western Canada will force the import of American, and perhaps Argentine or Australian oats, they add. Therefore, in the year ahead, instead of trading in a surplus supply market, the company expects to be reaching for wheat, barley, oats and rye in whatever markets can be found. «

BOND ISSUE APPROVED FOR MAPLE LEAF

A bond issue has been approved for Maple Leaf Mills, Ltd., in the amount of approximately $14.5 million in conjunction with the company's long-range financing program. Approximately $9.7 million will be used to retire first mortgage and general mortgage bonds, with the remainder going to reduce the firm's current bank indebtedness. «

Obituaries

MRS. CLAIRE M. VAN PATTEN, wife of Guy G. Van Patten, at Rancho Santa Fe, Cal., following an extended illness. Mr. and Mrs. Van Patten moved to California several years ago, following Mr. Van Patten's retirement. He had represented Hoffmann-La Roche, Inc., in Chicago and the northwest for many years.

HARRY POTTER SCRIBNER, 74, at Astoria, Ore. Mr. Scribner had been in ill health for several months. He was milling superintendent for the Pillsbury Co. at Astoria until retirement 12 years ago. Member of a milling family, he started in the business as a young man in Wisconsin.

LLOYD E. LEATHEROCK, 70, retired manager of the special products division of Kansas Milling Co., in Wichita. Mr. Leatherock directed Kansas Milling's special products division 35 years, until retirement some years ago. For many years he was active in the American Society of Bakery Engineers and the American Association of Cereal Chemists. Survivors are his wife, three daughters and six grandchildren.

HOWARD W. FISCH, 56, president of Highland Bakery, Inc., in Atlanta. Mr. Fisch was a son of the late William H. Fisch, formerly vice president of American Bakeries Co. «

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LEADING FLOUR IMPORTERS ABROAD

Many of the firms appearing in this list are available to handle the importation of other products besides flour. Some specialize additionally in cereals, some in bakers' sundries and others in feed grains and ingredients. Most of them have connections in adjacent countries and are equipped to handle both import and export business on an extensive basis. For a list of recommended firms dealing in specific commodities or in specific countries write to THE Northwestern MILLER, P.O. Box No. 67, Minneapolis 40, Minn., U.S.A.

ENGLAND

H. Cohen & Co., Ltd.
Hambro House, Vintners' Place
LONDON, E.C. 4
Cable Address: Bortrite, London

Mardorf, Peach & Co., Ltd.
52, Mark Lane LONDON, E.C. 3
Cable Address: "Dorfeach," London

Pillman & Phillips, Ltd.
26, Corn Exchange Chambers
Seething Lane LONDON, E.C. 3
And at Bristol and Liverpool

Vaughan Thomas & Co., Ltd.
The Corn Exchange Building
52/57, Mark Lane LONDON, E.C. 3
Cable Address: "Avaumas," London

GERMANY

Einfuhrhandel Mannheim
Hans Werle
MANNHEIM/GERMANY, E2., 1-3
Cable Address: "Einfuhr" Telex 0463270

DENMARK

Brodr. Justesen
COPENHAGEN
Cable Address: "Justesens," Copenhagen

SCOTLAND

Farquhar Brothers
50 Wellington Street GLASGOW,C.2
Cable Address: "Glencairn," Glasgow

McConnell & Reid, Ltd.
19 Waterloo St. GLASGOW
Cable Address: "Marvel," Glasgow

D. T. Russell & Baird, Ltd.
Also at Leith, Belfast and Liverpool
106 Hope Street GLASGOW,C.2
Cable Address: "Delight"

HOLLAND

Bulsing & Heslenfeld N. V.
Established 1885
Damrak 20-22
AMSTERDAM (C)
Cable Address: "Heslenfeld," Amsterdam

STOLP & CO., LTD.
47-48 Damrak AMSTERDAM
Cable Address: "Cleo"

Gebrs. Van Den Bergh's N. V.
ROTTERDAM
Cables: Locomotion Rotterdam

N. V.
Algemeene Handel-en Industrie Maatschappy
"MEELUNIE"
Heerengracht 209 AMSTERDAM

N. V. Agentuur & Commissiehandel
v/h P. C. Vis & Co.
AMSTERDAM
Cable Address: "Visco"

Luchsinger, Meurs & Co.'s
Handelsmaatschappij, N.V.
AMSTERDAM—(C)
Cable Address: "Matluch"

M. WITSENBURG JR. N. V.
Postbox 945 AMSTERDAM C.
Cable Address: "Witburg"

GRIPPELING & VERKLEY N. V.
Flour Specialists Since 1889
AMSTERDAM
Cable Address: Bygrip, Amsterdam

Millers in 44 Overseas Nations Read Every Issue of the Miller

CANADIAN COMMENTARY

CANADIAN MILLERS are not optimistic about sales of flour from their country to Mainland China now or in the near future. China's buyers and Canadian mills have been unable to work out price agreement on purchase of about 30,000 tons of flour which was said to be part of the deal negotiated earlier this year for a sizeable amount of wheat and barley.

Millers admit they cannot compete in the Chinese market with subsidized flour from other countries, and they question whether the Chinese really want flour. They're increasingly convinced that China wants wheat to process in its own mills rather than to import higher quality flour processed abroad. Some spokesmen in the Canadian grain trade feel that inclusion of flour tonnage in the agreed sale for wheat and barley was not a firm portion of the Chinese deal to buy in the negotiations conducted earlier in the year.

It's a question of price, not quality. If Canada had large quantities of low grade wheat to process, the story might be quite different. (For more on Communist China see page 14.)

●

Estimate Made of Wheat, Flour Exports

Alvin Hamilton, minister of agriculture, told the Dominion-Provincial Agricultural Conference in Ottawa that wheat and flour exports for the current crop year are expected to reach 325,000,000 bu., leaving an estimated carryover July 31, 1962, of about 300,000,000 bu. On the basis of present export figures, Canada is well on the way to that goal. October wheat and flour exports combined were more than 35,400,000 bu. in terms of wheat, pushing the movement to all export outlets to 106,055,000 bu. This was the first time since 1945 that first quarter exports for any crop year topped the 100,000,000 bu. mark. These figures, released by the statistics branch of the Board of Grain Commissioners, are subject to minor revision, probably upward. Official figures for November, not yet available, are expected to exceed 31,000,000 bu., boosting total Canadian wheat and flour exports to all destinations for the first four months of the current crop year to 137,000,000 bu. This would be 6,500,000 bu. less than the comparative total for 1945, when the movement climbed to 179,500,000 bu. by the end of December. For exports this year to reach that figure, December clearances to all destinations would have to exceed 42,500,000 bu. in the form of both wheat and flour.

The record movement was in the first five months of 1928, when more than 240,000,000 bu. as wheat and flour moved to all destinations. Approximately 21,000,000 bu. was flour.

The current crop year movement to the end of October of 106,055,000 bu. included 8,554,000 bu. in the form of flour. The comparative totals a year ago were 79,797,000 and 7,795,000 bu., respectively.

●

Moisture Reserves Low In Western Canada

Vast areas of Western Canada will require generous amounts of moisture if the prairie provinces are to have favorable yields in 1962. This is indicated in an extensive moisture survey conducted by Searle Grain Co., Ltd. While some exceptions exist, the report says that seldom have moisture reserve conditions, in Western Canada as a whole, been lower on Nov. 1 than this year. It points out, however, that nature has a way of confounding the experts; therefore, it is dangerous for anyone to look ahead to the 1962 season and say that, because certain conditions exist at the moment, or have existed during the past 12 months, "this or that" will happen in 1962.

It is stressed, however, that immense acreages, particularly in Saskatchewan — most pronounced on stubble land—are completely devoid of available moisture. Such lands, therefore, will be entirely dependent upon any moisture conserved between now and April 1, and upon growing season rains in 1962. «

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'Round the Districts With AOM . . .

District 13

Removal of stones, milling of rye, durum and oats, plus information on safety, were covered by speakers at District 13's November meeting in Medicine Hat, Alta. F. W. Marshall, Quaker Oats Co., Saskatoon, chairman, conducted the sessions for the Canadian millers. George H. Fright, plant superintendent for Ogilvie Flour Mills Co., Ltd., Medicine Hat, gave the address of welcome.

Moving into its technical program, the district heard from: Arthur (Manny) Forsberg, Jr., Fred Forsberg & Sons, Thief River Falls, Minn., on "Removal of Stones from the Mill Mix"; C. Hill, head oat miller, Quaker Oats, Saskatoon, on "Milling of Oats—Its Problems and Aims"; J. W. Mack, head miller, Maple Leaf Mills, Ltd., Medicine Hat, on "Milling of Rye," and Douglas Paterson, superintendent of Ellison Milling & Elevator Co., Lethbridge, on "Milling of Durum Wheat." Mr. Paterson is executive committeeman for the district.

Safety, and its importance to the industry, was the subject of R. C. Henderson, Alberta Workmen's Compensation Board. A. J. C. Willis, vice president of production, Ogilvie, Montreal, covered the function of operative millers in relation to modern requirements.

Dr. J. Ansel Anderson, director, grain research laboratory, Board of Grain Commissioners for Canada, presented an illustrated lecture. Don S. Eber, AOM's executive vice president, was master of ceremonies at the district's annual banquet.

J. Harris, manager of Maple Leaf's operations at Medicine Hat, introduced the banquet speaker, Sen. Gershaw, Medicine Hat, who spoke on the historic background of Alberta.

District 12

The Intermountain District turned out 66 members and guests for its winter meeting at Salt Lake City, with John Singer, superintendent, Big "J" Milling Co., Brigham City, chairman, conducting the sessions.

E. Robert Kern, assistant manager, Salt Lake Flour Mill, made the "welcome to management" address. P. R. McIntire, Utah Machine & Mill Supply Co., reviewed the 1961 AOM Technical Conference & Trade Show.

Mr. Eber was present to bring members up to date on current AOM activities.

Fritz Schiess, the Buhler Corp., spoke on the subject, "Pneumatic Mills in the U.S.," accompanying his talk with slides of installations.

Clyde Arnold, Industrial Fumigant Co., covered "Fumigation Safety in Flour Mills."

The history of Utah's flour milling industry, now compiled, was distributed to those in attendance by C. E. Robinson, one of AOM's former presidents.

"Another Aspect in Conveying," a paper accompanied by slides, was presented by Martin McGuire, vice president, Screw Conveyor Pacific Corp.

District 12's new officers, elected at Salt Lake City, are: Norman Crowther, Crowther Bros. Milling Co., Malad, Idaho, chairman, and K. Allen McFarland, Burley (Idaho) Flour Mill, vice chairman. Joseph J. Keiser, Salt Lake Flour Mill, was reelected secretary-treasurer.

The association's recognition award for serving as chairman of the district during 1961 was given to Mr. Singer by Mr. Eber.

At the banquet, Mr. McGuire presented each lady with an orchid, courtesy of Screw Conveyor. «

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at WAVERLY Mo.

New elevator on the Missouri river, and at junction of Highways 65 and 24 (65 miles east of Kansas City).

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MARKET QUOTATIONS AT A GLANCE

FLOUR

Dec. 7 Quotations, Based on Carlots, Prompt Delivery

	Kansas City Hard Winter	Minneapolis Spring	Buffalo Spring	Chicago	New York	Seattle
Bakery short patent	$5.30@5.55	$5.60@5.65	$6.32@6.37	$...@...	$...@...	$...@...
Bakery standard patent	5.20@5.45	5.50@5.55	6.22@6.27	...@...	...@...	...@...
First clear	3.95@4.15	...@...	...@...	...@...	...@...	...@...
High gluten	5.55@5.80	5.85@5.90	6.57@6.62	...@...	...@...	...@...
*Family	6.15@7.30	...@7.50	...@7.50	...@...	...@...	...@8.30
*Bakers fancy cake	...@...	...@...	...@...	...@...	7.57@7.67	...@...
**Straight grade cracker flour	...@...	...@...	...@...	5.08@5.18	...@...	...@...
*Pastry	...@...	...@...	...@...	...@...	...@...	...@...
Rye, white	...@...	4.49@4.59	...@...	4.77@4.87	...@...	...@...
Rye, medium	...@...	4.29@4.39	...@...	4.57@4.67	...@...	...@...
Rye, dark	...@...	3.74@3.84	...@...	4.02@4.12	...@...	...@...
Semolina	...@...	...@10.00	...@...	...@...	...@...	...@...
Semolina blend	...@...	...@8.25	...@...	...@...	...@...	...@...

	Toronto	Winnipeg
*Spring top patent	$6.55@6.70	$6.70@6.90
**Bakers	5.35@5.50	5.20@5.40

MILLFEED

Dec. 7 Quotations, Based on Carlots, Prompt Delivery

	Minneapolis Sacked	Minneapolis Bulk	Kansas City Sacked	Kansas City Bulk	Chicago Sacked	Chicago Bulk	Seattle Sacked	Seattle Bulk
Bran	$....@44.50	$39.50@40.00	$41.50@42.00	$37.00@37.50	$47.00@47.50	$42.00@42.50	$....@....	$....@....
Std. midds.	46.00@46.50	41.00@41.50	....@....	38.00@38.50	47.50@48.00	42.50@43.00	....@....	....@....
Red dog	48.00@49.00	....@....	....@....	....@....	49.00@50.00	....@....	52.00@53.00	46.00@48.00
Shorts	....@....	....@....	41.50@42.00	38.50@39.00	....@....	....@....	....@....	....@....
Millrun	....@....	....@....	....@....	....@....	....@....	....@....	44.00@45.00	39.00@40.00

	Bran	Shorts	Middlings
Toronto	$54.00@55.00	$55.00@56.00	$64.00@65.00
Winnipeg	41.00@44.00	43.00@47.00	50.00@54.00

*Flour prices 100 lb. cottons.
**Flour prices 100 lb. papers.

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GRIST of GRINS

Too bad the world has progressed. When a modern man's wife nags him he goes to his club. In the caveman days he just reached for his club.

◆ ◆ ◆

"Well, Your Honor," said the defendant, "it was like this. I was in a phone booth talking to my girl when this guy comes up and wants to use the phone. He opens the door, grabs me by the neck and tosses me out on my ear."

"Then you got angry?" asked the judge.

"Yes, a little," answered the man. "But I didn't get real mad until he grabbed my girl and threw her out, too."

◆ ◆ ◆

A lodge member approached Henry. "We're having a raffle for a poor widow," he said. "Will you buy a ticket?"

"Nope," said Henry. "My wife wouldn't let me keep her if I won."

◆ ◆ ◆

A man came out to install the hillbilly's new TV set. "Now this," he said, pointing to the antenna, "will have to go on the roof."

"It's like I always said, Zebe," said the lady of the house to her husband. "One thing leads to another. Now we have to put a roof on the house."

◆ ◆ ◆

"Henry is so forgetful," the wife complained to a visitor. "He forgets his coat, keys—even his address. I sent him out for some lemons just now, and I don't know if he'll remember to come home."

As the visitor commiserated with the wife, Henry burst into the living room.

"You'll never guess what happened to me! An old eccentric was passing out money on the street, and look what he handed me."

He opened a fistful of $100 bills.

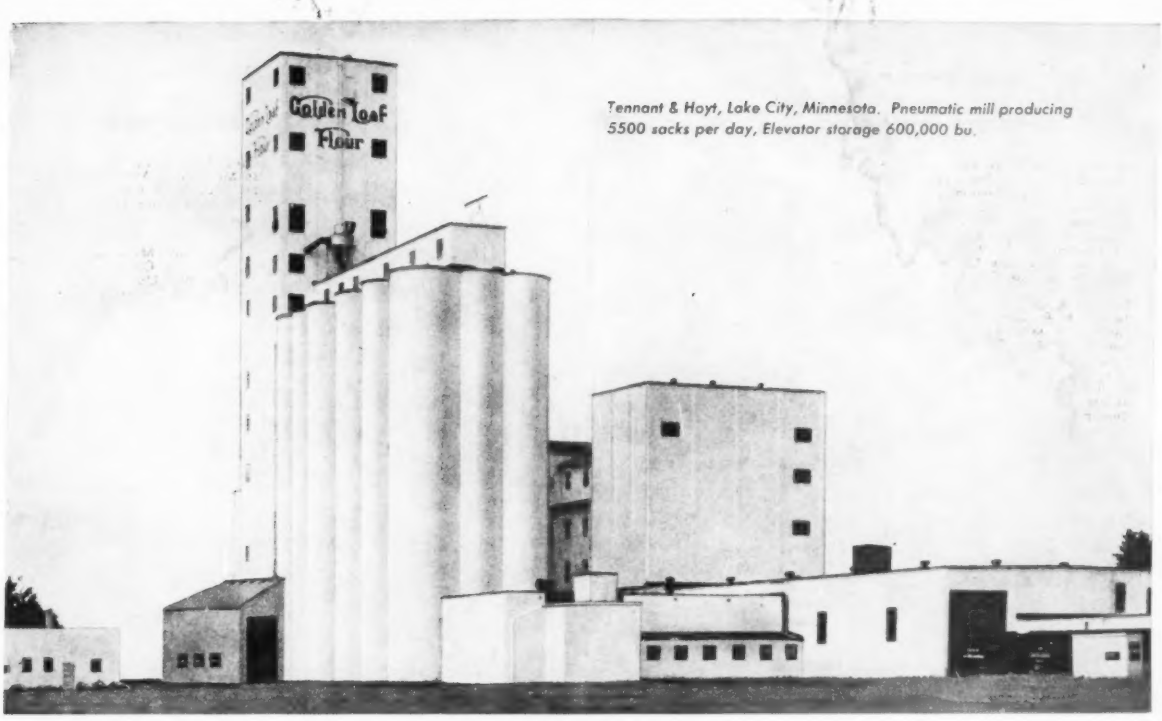
"See," said the wife. "He forgot the lemons."

◆ ◆ ◆

An Oklahoma oil man went to see his dentist for an examination.

"Perfect," exclaimed the dentist. "You don't need a thing."

"Well, drill anyway," said the oil man. "I feel lucky today."



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Experience proves that Dyox® strengthens gluten to maximum, makes doughs more machinable, prevents "stick-ups". And there's no waste with W&T's Dyox. Accurate proportioning equipment makes chlorine dioxide gas as it is needed —applies it uniformly in precise amounts.

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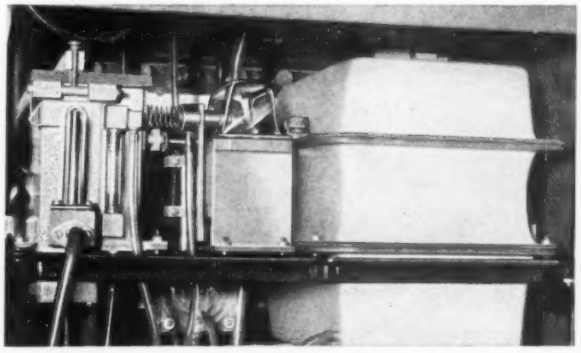

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Bread is essential for sturdy growth; it has been, down through the centuries. And today's bread is better than ever before in the history of the world. But he isn't interested in all that. Bread is fun to bite a hole in, and even the hole tastes good.

General Mills stands behind the bakers of America, as they stand behind our children's healthy growth.

Good eating will always begin with bread

General Mills